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Intestinal Gardening

for the

Prolongation of Youth

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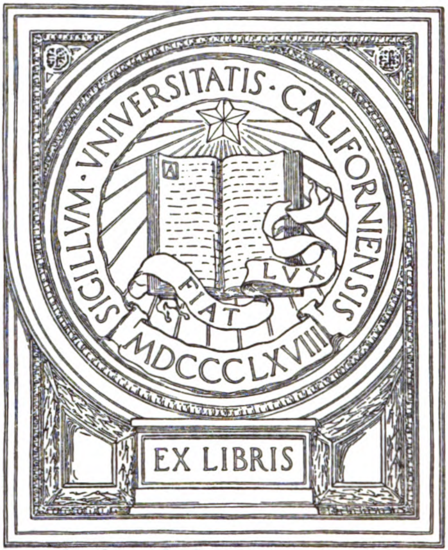
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INTESTINAL GARDENING

for

The Prolongation of Youth

UNIV OF CALIF
MEDICAL SCHOOL

by

JAMES EMPRINGHAM
B.S., D.M., S.T.D.

National Secretary of the Health
Education Society, Inc.

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DEDICATED
to
THE BACTERIOLOGISTS AND PHYSICIANS
of the staff of the
HEALTH EDUCATION SOCIETY
without whose sympathetic co-operation
these studies would not have been possible.

The methods of investigating the digestive tract which have been briefly outlined in this volume must prove invaluable in enabling the practicing physician to determine the presence of abnormal bacterial processes before the onset of the clinical signs of incurable or highly refractory states of auto-intoxication.

SAMUEL J. SMITH, M.D.

INTRODUCTION

By Simeon E. Duke, M.D.

FROM the days of Pasteur to the present time the debt the physician owes to the microbiologist is more than words can well express.

Bacteriology has revolutionized the practice of medicine. It has made surgery comparatively safe by its gift of antiseptics and has revealed to the physician the origin of most disease.

Much of this great advance has been due to men who, like the author of this little book, have been content to toil for years in a special field looking for no reward except the joy of searching for truth. Dr. Empringham is a practical analyst. Originally his chosen profession, this work has continued to be his hobby through life.

These untechnical pages are not a mere hash of the theories of others. Dr. Empringham has a first-hand acquaintance with his subject and knows whereof he speaks.

As one of the Advisory Physicians of the Health Education Society, I have been much interested in the painstaking, scientific technique of the Newer Bacteriological Methods of Fecal Analysis as carried out in the laboratories of that philanthropic Society.

Education and prevention can do much to eliminate sickness, disease and death, and such prophylactic organizations most surely deserve the commendation and active support of every good citizen.

Simeon E. Duke M.D.

A Word from Dr. Fournadjieff of New York

EVERY year thousands go to their graves because they consult the family physician too late. "An ounce of prevention is worth a ton of cures" and "A stitch in time saves nine" is just as true today as it was a hundred years ago.

Pathological conditions may often be detected and eliminated years before they result in such tragedies as diabetes, enemia, tuberculosis, Bright's Disease or organic heart troubles.

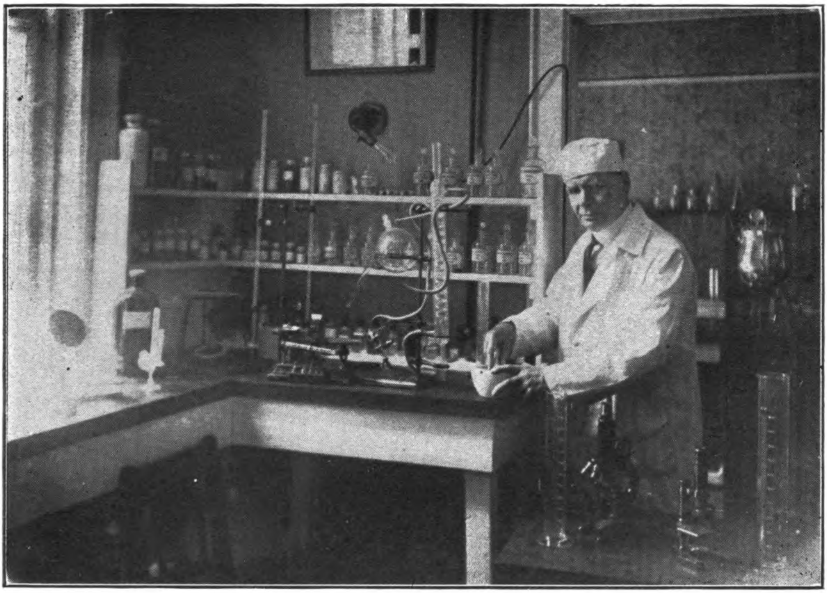
Periodical stock-taking of the physical condition of every person by means of laboratory, physical, neurological and other examinations is, therefore, of the highest importance.

Organizations, like the Health Education Society, that by means of visiting teacher-nurses, lectures by experts and sound literature by specialists seek to enlighten the people with respect to the duty of avoiding sickness and of building strong bodies by hygiene and the newer knowledge of nutrition are doing much for the welfare of the nation.

Movements of this kind doubtless tend to lessen the financial income of the medical practitioner but, nevertheless, no right-minded physician can do other than rejoice in the success of such much-needed prophylactic work.

This Society is especially fortunate in having as its General Secretary a man like Dr. Empringham whose long experience as a laboratory specialist and dietitian peculiarly fits him for leadership in scientific health education.

D. George Fournadjieff, M.D.



DR. EMPRINGHAM IN HIS LABORATORY

FOREWORD

SHAKESPEARE says: "Our bodies are gardens." The great poet little knew how truly he spoke. That most useful of all modern marvels, the microscope, has disclosed the fact that the lower intestinal tract (the colon) produces more plants every day than all the truck farms in the state can raise in a year. The inconceivably small one-celled forms of vegetable life known as bacteria multiply by fission—that is they divide into two perfect units—several times every hour. In this way, these tiny plants increase with such astonishing rapidity that one germ becomes the ancestor of nearly eight millions in twenty-four hours. It is estimated that the average person expels thirty-three trillions of these bacteria from the colon every day. About two-thirds by weight of the human feces is made up of these microscopic organisms which are, of course, much too small to be seen by the unaided human eye.

Many people think microbes or germs are small insects, but modern science places the majority of such micro-organisms in the vegetable kingdom.

Intestinal bacteria are of many kinds—about two hundred different species are known to invade the human colon. Many varieties are harmless, other kinds generate irritating gasses and poisons which are absorbed into the blood stream and give rise to ill-health and premature old age.

Now, somewhat as the blood is defended against disease germs by the white blood-corpuscles, so nature protects us against poisonous bacteria in the intestines by means of friendly microscopic plants which are native to the lower bowels, and which are the natural enemies of the poisonous alien weeds.

The little protective plants generate a mild acid which disinfects the bowels and prevents the growth of injurious germs. But under the artificial living conditions and unnatural diet of "civilized" life the alien poisonous weeds often entirely crowd out the native beneficent flora.

The following pages are an attempt to describe in simple language the elementary facts about the bacteriology of the intestinal tract and to explain the progress modern science has made in expelling the toxic weeds by replanting the natural flora.

Generous assistance from a number of well-known microbiologists is most gratefully acknowledged not merely for help in looking over the proofs and making suggestions, but more especially for help in getting at some of the truths.

I am also deeply indebted for the assistance given by many physicians. Without the help of my friends of the medical profession, my studies along these lines, extending over many years, would not have been possible.

Physicians, of course, are not, as a rule, bacteriologists and bacteriologists are seldom medical men. A division of labor is necessary for no man can know everything. If Pasteur or Metschnikoff or Tissier had been physicians they would not have found time for their epoch-making discoveries in the realm of microbiology.

From time to time my medical friends have sent me fecal and other specimens of cases they had under observation for the purpose of ascertaining the effect of the various species of intestinal flora upon the general health, and together we have studied the results of special diets and of the protective strains of bacteria which were isolated and cultured by myself and administered by the physicians via the rectum and per os.

The science of bacteriology is still in its infancy but enough is already known to prove that the ocean of microscopic life in which we live determines the condition of our health and the duration of our life-span to an extent that is entirely unsuspected by the average man.

James Empringham

New York, September 5th, 1924.

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CHAPTER I

Age Cannot Cause Sickness and Death

TIME does not stop a cannon ball. A projectile does not come to a standstill because so many seconds have elapsed since it left the gun. Once set in motion it would continue its flight forever were it not for the resistance it encounters from such invisible obstacles as gravitation and the atmosphere.

It is just as true that a man does not become senile and die because so many years have elapsed since the movement we call life projected him into the world. Time is as powerless to retard or stop life as it is to bring a ball to a standstill. The cells which make up our bodies are potentially immortal. We fall into our graves as a cannon ball drops into the sea because from the moment of birth our life-force encounters unseen resistence. The whitening hair and other degenerative changes which we wrongly ascribe to age are merely external evidences of the slowing up of our physical machinery brought about by the obstacles our vital force encounters.

It is estimated that fifty per cent of this resistance comes from the countless billions of poisonous germs that invade the intestinal tract. These alien bacteria in the bowels are largely the result of our artificial and wrong methods of living. They are unnatural and unnecessary. Some people are almost free from them. This is one reason why many men at forty are older than others at eighty.

The following quotation from a recent article by Dr. Fisk illustrates just what we mean:

ON PROLONGING HUMAN LIFE

By Eugene Lyman Fisk, M.D.

Medical Director Life Extension Institute of New York

"Is old age a disease? No, it is not a disease, but it is disease. Neither old age, middle age nor youth are functions of time. They are physical states, the mere expressions of definite incident forces with which time has no more to do as a factor in causation than a tape measure with the height of a man.

"Current notions with regards to the duration of human life are based largely upon superficial observation and tradition. True, we are faced by the undeniable fact that one-half of the people die before sixty years of age. A lifetime of seventy years is considered as representing the human life cycle and is supposed to be fixed by biological, if not by a divine, law. In a sense this is true. That is, the human organism has evolved through many phases to a type that resists the unfavorable factors in environment and faults in its own structure for that period. The insidious effect of poisons formed in the body, as well as those admitted to the body, may be regarded as governed by natural law, but it is quite obvious that with larger knowledge of the operation of such laws, man's intelligence can set in motion influences also in accord with natural laws that can profoundly modify the life cycle of man or of any other organism. In earlier times such attempts were more along supernatural than natural lines. Some mysterious and marvelous elixir or charm was sought

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that would enable mankind to withstand the so-called ravages of time, which we now know were mostly the ravages of micro-organisms.

"If it can be shown that life cycles are not pre-ordained or immutably fixed, we may face the problem of extending the human life cycle, of expanding the power of the human organism exactly as we would face such problems in the laboratory when dealing with the fruit fly or the sea urchin or the star fish or the tadpole. There are living organisms such as the redwood tree, that have a life cycle apparently limited only by the geologic age in which they live. There are others that live but a day because of obviously faulty structure. Working with the fruit fly, Loeb and others have prolonged the life cycle of this organism 900 per cent merely by keeping it at a lowered temperature and *protecting it from adverse external factors, such as infection and poison.*

"Our happiness, our physical independence, is hourly attacked by micro-organisms. Occasionally we have to deal with an emergency situation such as influenza, where these micro-organisms make a fierce drive against the whole human race. In the intervals between such attacks we have constantly to deal with the bacteria that attack us insidiously, not always to the point of developing conditions that could be grouped in the classic diseases, yet bringing about a gradual tissue change which we describe as old age or advancing age."

In the last number of the Medical Journal of the Battle Creek Sanitarium, the Director-in-chief, Dr. John Harvey Kellogg says:

"What is the natural limit of life for a man no one knows. Human beings rarely have a fair

> chance to reach the normal existence. The death age represents simply the end of the lifelong struggle against unfavorable conditions, life-destroying forces. The body endures as long as it can, then succumbs.
>
> "The structure of the brain, the heart, the liver and the kidneys, of every vital organ is so marvelously perfect, and so wonderfully adapted to its normal purposes, there seems to be no good reason why these organs should not continue to do their natural work efficiently FOR TWO OR THREE CENTURIES OR EVEN MORE, provided they were required to do no unnecessary work or to deal with unnatural and damaging agencies."

Dr. Kellogg arraigns the putrefactive bacteria of the intestines as the chief factor in unduly shortening man's life.

CHAPTER II

Factors That Cause "Old Age"

OF the many insect pests of the tropics none is so destructive as the white ants that work so insidiously destroying timber that their presence is never suspected till a structure tumbles in ruin.

A house may seem to be in perfect repair when a man leaves home in the morning but when he returns at night he may find his dwelling a wreck.

But this work of destruction is really not sudden at all. Month after month millions of ants concealed in the wood have been silently gnawing away till nothing is left but a shell that goes down in ruin under the first storm of rain.

Here in the North, homes of another sort are ruined every year by still more terrible pests that work so secretly their presence is never suspected. The dwellings to which I refer are of more value than those made of wood and stone, for they are built of flesh by the Finger of God to serve as the home of man's soul. Once wrecked these "houses not made with hands" can never be restored.

Dwellers in the tropics are continually on the lookout to discover any indications that may lead them to suspect their homes are being attacked by insects. But few people no matter in what land they live ever dream that their bodies are possibly being undermined by innumerable enemies incomparably more destructive than the tropical ants.

How often we see a man in apparent good health suddenly carried off with heart-disease or some other illness. In reality such disaster is not sudden at all. In most cases, the body has been subjected for years to the ravages of billions of enemy microbes that are the more terrible because unseen and unsuspected. Of all deadly germs none takes a heavier toll than the common putrefactive bacteria which are invariably present to some extent in the human intestines but which are usually thought of as not being dangerous to life.

People in tropical lands tell us they have no way of knowing whether their homes are infested with white ants or not. But no man today need be in doubt as to whether his body is harboring enemy microbes.

Analysis by modern methods of a small particle of the feces (i.e., the excreta or waste matter from the intestines) discloses the per cent of every species of germ with as much certainty and precision as a farmer enumerates his live stock. The process is long and intricate and demands much time, skill and care.

In the modern system of analysis the germs are made to multiply in incubators in different foods to find out what they will do. For it may be said of microbes as well as of men, "by their works ye shall know them."

Some kinds excrete gases and poisons that are injurious to human life; others generate a mild acid that is harmless to man but which acts as a germicide destroying the dangerous species of microbes.

The French Government has established free fecal laboratories for the welfare of the people and a movement is now on foot there to compel every person to submit a specimen of their excreta for analysis at least once a year.

A leading physician of France lately said: "The day is coming when we shall no longer be fooled by our feelings into a false security but each will know the real state of his health with precision and will thus avoid death and disease. In the future not *comment vous portez vous* but *Quel numero portez vous* will be the way we shall greet our friends." (Not "How are you," but "What is your number," i.e., what is your percentage of protective bacteria)?

Lately in England in various centres, the National Church has established laboratories for fecal and other analyses by the newer methods.

Three years ago, when the Health Education Society began its work in New York a canvas was made of existing pathological laboratories to find how many were specializing in fecal analysis by the newer methods. We failed to find one.

In no instance could we discover any analysis that went beyond a more or less painstaking search for parasites, ova or occult blood. Fecal bacteria (of which the average man excretes no less than thirty-three trillion a day of one kind or another) are ignored as if they were of no importance. Yet a few of these germs taken at random from any feces and injected into the veins of a guinea-pig will sometimes cause death.

Bacteriological fecal analyses are, of course, made by such establishments as the Rockefeller Institute and by the private laboratories of a few physicians who specialize in intestinal toxemia but nothing of the kind could we find in the regular pathological laboratories.

There are two reasons for this condition of affairs.

First, the general public (and even the physicians who are not bacteriologists—and few of them are) know little or nothing about the advance that Science has made in this direction.

Secondly, the bacteriological analysis of feces requires a long and elaborate process and it is difficult to find technicians who have been trained in this special work.

For these reasons, the Health Education Society with the cooperation of many public-spirited physicians and other philanthropists has established analytical laboratories where fecal, urine and other analyses are now carried on gratuitously when necessary and always at actual cost.

Modern Science Extirpates the Toxic Germs by Simple and Natural Means

Now let us go back to our illustration of the white ants. It is difficult for those who live in the tropics to discover whether or not their homes are being undermined by these insect marauders and it is a still harder task to get rid of the pests even when they are discovered.

For many years, all attempts to extirpate the toxic bacteria from the intestinal tract were also quite unavailing. The earlier efforts were along the line of driving the poisonous invaders from the bowels by means of germicides and disinfectants. Practically no success was ever obtained in this way. There is no known chemical or drug that will destroy the bad bacteria without injuring the patient at the same time.

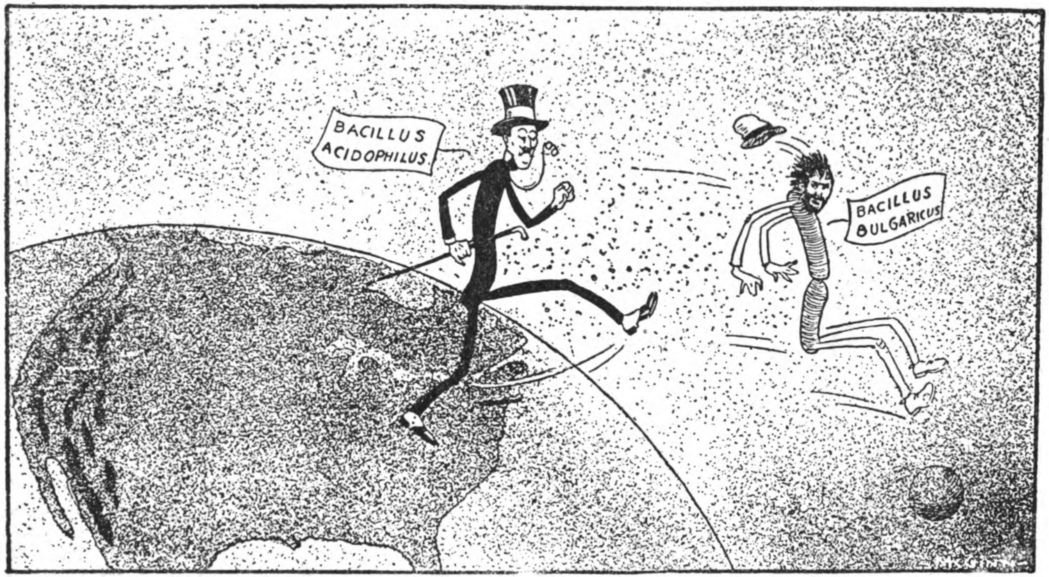
The intestinal tract is like a garden in that it insists on producing some kind of vegetation. Any garden, if not compelled to grow wholesome fruit, flowers or vegetables, will soon be found a mass of noxious weeds. It is so with the human colon.

Bacteria are one-celled plants. In infancy nature sows the baby's intestines with such a fine crop of good flora there is no room for poisonous weeds which too often monopolize man's intestinal tract in later life. A garden must grow something. Cultivate the good flora, and the bad will have no chance to thrive. In the long run you will find intestinal gardening pays.

As we have already said, Metschnikoff of the Pasteur Institute blazed a trail in the right direction when he proved that the colon is naturally protected by billions of one-celled microscopic plants that generate an acid in which toxic germs cannot live.

These friendly germs known as Bacillus Acidophilus so closely resemble the ordinary lactic-acid bacteria that Metschnikoff mistook the one for the other and advocated sour milk in general and the Bulgarian variety in particular as the best method of fighting intestinal toxemia and thus deferring old age.

The results were disappointing for the simple reason that all efforts to acclimatize Bulgarian and


BACILLUS ACIDOPHILUS
BACILLUS BULGARICUS

The Bacillus Acidophilus, the Native Aristocrat of the Intestines, Kicks the Bacillus Bulgaricus (Pretender and Bounder) Off the Map

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other exotic, acid-producing bacteria to the human colon ended in failure.

All properly prepared sour milk is more easily digested than fresh because it forms smaller and lighter curds, but the idea that any acid-producing germs will thrive in the human colon except the natural Bacillus Acidophilus is now known to be a mistake.

The modern method of culturing sterilized milk with Bacillus Acidophilus is meeting with great success. Unfortunately, Bacillus Acidophilus are very delicate plants. Unless great care be used when culturing the sterilized milk, wild germs will gain entrance. These weeds grow so rapidly they smother the thoroughbred Bacillus Acidophilus with the result that much of what is labelled as pure culture of Bacillus Acidophilus often contains none of the desired organisms.

After analyzing many brands of commercially made fermented milk bearing the name Bacillus Acidophilus and too often finding no Acidophilus plants at all but merely the easily cultivated, worthless Bacillus Bulgaricus the Health Education Society established a special laboratory for the culture of the true Bacillus Acidophilus where the needy can be provided with the genuine cultures at cost.

CHAPTER III

How My Own Youth Was Renewed

ONE morning, fifteen years ago, as I stood in the office of a great specialist undergoing a physical examination, the physician turned to me and said: "You are a very old man."

"What age do you take me to be?" I asked.

"Upwards of eighty," replied the Doctor.

Thinking the man was joking, I laughed and said: "Everyone gives me credit for being a patriarch. Why, Doctor, I was born in ——."

"I don't care when you were born," he replied, "you are an old man. Senility is not a question of the calendar—not a mere matter of the lapse of time since we were born—the degenerated condition of the body called 'old age' is merely a register of the manner in which we have spent our days. Judged by that standard, you are a very old man."

The Doctor gave it as his opinion that all civilized people suffer more or less from auto-intoxication as a result of the poisons generated by the bacteria in the intestines, and, he added: "Your extremely sedentary life has resulted in the worst case of toxemia I have ever witnessed."

My craze from boyhood had been microbiology. The hours nature required for exercise had been spent over a microscope. This hobby acquired in the years I had worked in an English analytical laboratory, and while majoring in science had gradually usurped all my spare time.

The theory of Metschnikoff, which I had heard

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from the lips of this great genius himself at the Pasteur Institute, had greatly impressed me. So when the New York specialist, after his physical examination pronounced my doom, I said: "Doctor, do you think the Metschnikoff method of changing the flora would help me?"

"I doubt it," replied the physician. "In your case, at least, it would be like locking the stable door after the horse is stolen. Your organs of defense and elimination are worn out fighting the poisons—the mucus membranes of your intestines have lost their defensive power and degenerated tissue can never be restored." Other specialists confirmed his diagnosis.

Rejuvenated by Friendly Bacteria

For a man under forty to be told there is nothing between him and the grave but a few months of suffering is somewhat discouraging. I determined not to give up without a struggle. Within a month I was in Paris trying out the Neo-Metschnikoff method of flora transplantation.

Towards the end of the year, I returned to America another man. My suffering was a thing of the past. The ugly, brown patches diagnosed by specialists as "senile kerotosis" had disappeared from my forehead, my blood pressure had returned to normal, and I felt like a youth again. My friends were astonished at the change. My family physician and others rather made light of my "bug" explanation and said the benefit was due, doubtless, to my long vacation. But my microscope and other tests showed me that the poisonous bacteria of my intestines had been replaced by the anti-putrefactive variety and I was convinced that my rejuvenation was the result of this transplantation.

Supplied Himself with New Germs

During my stay in Paris, I had become familiar with the newer methods of fecal examination and of germ culture. Knowing the terrible fight my bodyguard of friendly bacteria were having to maintain their ground against the billions of putrefactive enemies that daily gain entrance through food, I spent much of my time raising regiments of protective soldiers and thus my army of the interior received fresh recruits every day. My interest in the subject became so feverish and my desire to learn more of the effect that intestinal germs play in the health and disease of mortals, led me to make an arrangement with the city laboratories and hospitals by means of which I received daily many fecal specimens for study. The data I thus compiled convinced me that Metschnikoff's main theory is true, but that his milk scheme for changing the flora, effective enough in the test tube, fails in the intestines, because the Bulgarian and other strains he employed are not in their natural habitat in the human colon, and cannot maintain themselves there.

Discredited for a time, the epoch-making discovery of Metschnikoff is now admitted as a matter of course by all microbiologists. Metschnikoff simply said that if the friendly bacteria of infancy could remain dominant through life, doctors and undertakers would have little to do. But we break nature's laws and dig our graves with our teeth.

CHAPTER IV

Men of the Future May Be Young at One Hundred

SOME years ago, Owen of the British Museum, the most distinguished comparative anatomist of modern times, announced that the span of man's life should be normally not less than one hundred and thirty years. He reached this conclusion by observing that all creatures except mankind seemed naturally to live six times the length of their growth period—that is, the time required by any animal to reach physical maturity. We believe that no naturalist has yet found any species that does not conform to this law.

A dog takes two years to reach maturity and lives twelve or more years. A horse continues to grow for three years and, in its natural environment, lives about twenty. An elephant takes upward of forty years to develop and may live nearly three hundred. A banana fly becomes an adult in about a week and dies of old age in sixty days. Man is supposed to reach his physical maturity by his twenty-first year, but authorities agree that his bony frame often continues to grow until the twenty-second year. By analogy with the rest of creation we would, therefore, expect that men would live six times that period or one hundred and thirty years. But statistics show that the average life of man is only forty-one years—not even twice the length of his adolescence.

Our Cells Are Potentially Immortal

The researches of modern biologists not only tend to prove that the average life of civilized man is shorter than nature intended, but seems to hint that science may some day enable humanity to maintain youthfulness for a much longer period than even that suggested by Owen.

All animals are merely groups of cells. It was formerly supposed that age inevitably impaired these living bricks of which our bodies are built. We now know that this is not so. Tests that have been in progress in many laboratories during the past fifteen years prove that all the cells which make up our muscles and membranes are potentially immortal and might continue to live forever under favorable conditions. For example, in January, 1912, Dr. Carrel of the Rockefeller Institute, took a piece of tissue from the heart of a chicken and placed it in nutrient media. Nearly twelve years have elapsed, yet the cells composing that fragment of chicken's heart are still living apparently as young and vigorous as ever. The success of this marvelous experiment which is being duplicated in many laboratories is due to the fact that every day the waste products of the cells are carefully washed away and the tissue is continually immersed in a medium of fresh and suitable nourishment. Dr. Carrel's piece of chicken embryo has already survived six times longer than if it had been permitted to live a normal life in the barnyard and it is the opinion of biologists that it will never die so long as it is daily washed from its own waste products and properly fed.

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Toxic Wastes Shorten Life

All creatures automatically poison themselves with the waste excretions of their own bodies. Not time, but these toxic products produce those senile changes which we call old age.

In addition to this, the alimentary canal of civilized man is continually invaded by millions of putrefactive bacteria and it is the poisonous excretions of these intruders rather than the toxic wastes of his own body-cells that unduly shortens human life.

Microbiologists calculate that the average, normal man harbors at all times in his intestines thousands of times more microbes than there are people on the globe. The usual estimate is a thousand billion bacteria for each person. This teeming population of man's alimentary canal, made up of about two hundred separate species, is divided by the microbiologist into two main classes. Just as all the varieties of serpents on the earth are either venomous or harmless, the harmless snakes being of real service to man as destroyers of vermin, so all species of bacteria within us are a blessing or a curse according to whether they excrete health-giving fluids or death-dealing toxins.

The poisonous colon flora are known as the putrefactive bacteria. The offensive odors and decomposition that overtakes all flesh so soon as it ceases to live, is due entirely to the action of these disgusting microbes. These poisonous bacteria swarm by billions in the colons of most people ready to devour the excess of protein (i.e., meat, fish, eggs, etc.), that has passed through the stomach and small in-

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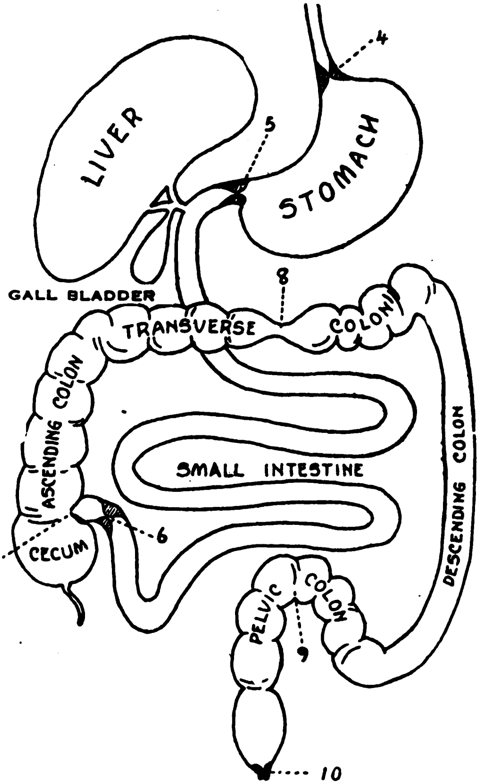
testines without being absorbed and assimilated. These germs produce the same kind of toxins in the human canal that they manufacture from the flesh of dead and decaying animals. Bacteria by billions swarm in the colons of all mankind even of breast-fed infants, but the flora found in the alimentary canal of breast-fed babies are there for the purpose of guarding the health. They accomplish this by excreting acids in which the poison-producing bacilli cannot live. As the child grows older, the harmful organisms gain more or less of a foothold.

Defecation Several Times Daily Is Natural

In the colons of most adults, at least thirty per cent of the microbes are of the friendly kind, but they are not numerous enough to produce sufficient acid to drive out the poisonous intruders. We do not often find very bad bacteria in the feces of wild creatures, nor in such domestic animals as are herbivorous. Why then is man thus afflicted? For several reasons. In the first place, all wild animals have a bowel movement after every meal—so do infants and savages of the forest.

The alimentary canal comprising mouth, aesophagus, stomach, small intestine and colon is really all one and the same long tube. The passage of food through the mouth and aesophagus into the stomach causes a wave-like motion which continues through the whole length of this tube to the outlet some thirty-five feet away. This peristaltic movement is for the purpose of pushing along and extruding the waste residuum of earlier meals. All wild animals free themselves from food remnants several times each day and always following a fresh intake of food.

Savages of the forest do the same; so do young human beings before they learn civilized habits. Who ever heard of a healthy baby with only one motion per day? But so soon as the child is weaned and begins to take our unnatural, refined foods from which the cellulose as well as other natural constituents has been removed, constipation inevitably sets in, and in place of five movements a day, the child has but two or three. As it grows older, the little one learns it is shameful to have needed relief on the street, in the car, or at church and the colon soon forms the habit of defying the calls of nature and nature resents the discourtesy and discontinues her "calls."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LIVER
5
STOMACH
GALL BLADDER
8
TRANSVERSE
COLON
ASCENDING COLON
SMALL INTESTINE
DESCENDING COLON
6
CECUM
PELVIC
COLON
9
10

DIAGRAM OF FOOD TUBE

Showing the Ten Gates which control the movement of food along the canal. 1, Mouth; 2, Fauces; 3, Entrance to Oesophagus; 4, Cardiac Orifice of Stomach; 5, Pylorus; 6, Ileo-cecal Sphincter; 7, Ileo-cecal Valve; 8, Keith's Node, seat of reverse peristalsis; 9, Pelvic Colon; 10, Anus.

CHAPTER V

How the Tiny, Toxic Weeds in the Bowels Eventually Poison the Blood

THOUSANDS of people pass through life content with but one movement in 24 hours. Modern medical science calls "once a day" constipation and puts the blame for most of our ills on this injurious habit but some of the older physicians insist that it makes no difference whether we have one movement or three. Who shall decide where doctors disagree? The practical laboratory worker. He has the facts which make him a competent umpire. No microbiologist ever found the feces of a "once-a-day" person free from poisonous germs. It is the invariable experience of all bacteriologists that other things being equal, the percentage of toxic flora in the excreta bears a constant and exact relation to the frequency and thoroughness with which the colon is relieved of its waste matter.

Indeed, common sense without special knowledge ought to teach us it makes a difference whether our refuse is emptied twice daily or only once. Suppose on a summer morning you found some meat spoiled by being left through mistake on the sideboard all night. Would it be more tainted or less by evening if left there in the heat another day? Conditions in the warm, moist, dark, airless colon are much more conducive to putrefaction.

The alimentary canal is divided into three main sections. The first of these is the stomach in which the food is made ready for assimilation into the blood. The stomach, therefore, is a sort of kitchen. The food next enters the small intestines. Here it undergoes further preparation and is gradually absorbed through the walls of this tube into the blood. The small intestines are, therefore, the dining room. The refuse, or unused residuum of the food then passes through the ileo-cecal valve into a wide, short tube called the colon and is ready to be ejected from the body at the first convenient opportunity. The colon is, therefore, simply the garbage pail.

Under normal conditions, the kitchen (stomach) and dining-room (small intestines) are kept free from bacteria through the germicidal action of the digestive juices; but in the garbage pail (colon), bacteria good or bad always swarm in incredible billions. This is chiefly because in civilized man the bowels are not emptied as often as nature intended.

How Long Has the Journey Taken? Is the Main Question

The X-Ray shows that food passes through the stomach and small intestines—a distance of twenty-five feet—and reaches the colon in eight hours. It is then ready for ejection. Yet, the average person permits this seething cesspool of corruption to remain in the body not merely twenty-four, but often forty-eight or more hours.

During the war, the postman deposited a letter in my mail-box every day from my son in the trenches. The letters arrived daily with charming regularity, but I was not content with this service because the post-mark showed me each missive had been six weeks on the way. Many "once-a-dayers" think that they are regular enough, but the X-Ray and barium meal test shows that in the large majority of cases forty-eight or more hours have been consumed in a transit that should never take more than sixteen.

If food requires only eight hours to pass through the stomach and small intestines—a distance of twenty-five feet—undergoing, at the same time, a series of marvellous chemical transformations, why should the rejected, decaying residuum take twenty-four hours or more travelling to the outlet, which is only one-fifth of the distance, putrefying and poisoning the blood-stream during all this needless delay?

Spores Not Killed by Cooking

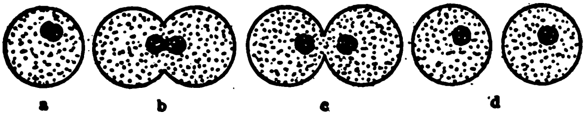
It is sometimes said that we are in no danger from the innumerable putrefactive bacteria we necessarily swallow each day with our food, because most of them are destroyed in cooking and by the hydrochloric aicd of the gastric juice.

This is generally true of the microbes themselves, but many species of putrefactive bacteria are "spore bearing" and the spores (not eggs, but a mummified form of the germs) defy all ordinary powers of destruction. I have immersed these spores in hydrochloric acid, much stronger than that of the gastric juice and cooked them under pressure in the autoclave at a temperature twice that of boiling water, but after all this these mummified microbes when placed in a suitable environment always hatched out just as though nothing had happened. These spores have an incubation period of twenty-four hours; that is, it takes them a day and a night to come to life at the temperature of the human body. Now if, like all other animals, civilized man promptly expelled the wastes of digestion instead of hoarding them in the colon, these dried up mummified microbes would not have time to come to life.

All kinds of bacteria propagate by "fission," which means division. Every twenty minutes, each normal germ gives birth to another by dividing itself into two. Figure it out and you will see that at this rate each microbe becomes the ancestor of more than seven million germs every twenty-four hours. Need we wonder that the average human colon is at all times a cesspool of billions of toxic bacteria, continually polluting the blood stream with such poisons as indol, phenol, skatol and many others?

Dr. Nathan Mutch, the eminent pathologist of Guy's Hospital, London, says:

> "If waste products could be removed and fresh glucose broth supplied without limit, a single coccus would in three days' time give rise to progeny weighing a billion times a billion tons, and capable of destroying the entire sugar supply of the world in a fraction of a



GERMS MULTIPLY BY DIVISION

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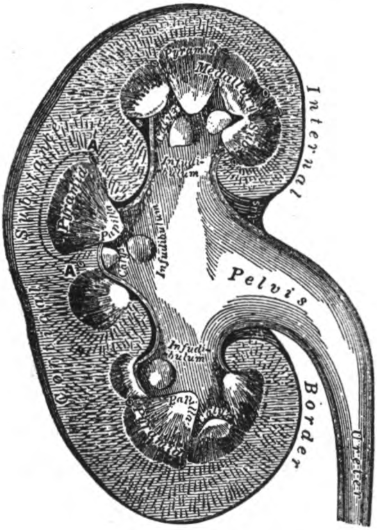
second. Fortunately, such conditions are not present in the alimentary tract, growth being limited by rapid absorption of all soluble food through the mucosa, by competition with other bacteria, and by constant evacuation."

Many persons are apparently in robust health, with a fine appetite, never an ache or a pain and nothing to suggest intestinal toxemia so far as they themselves are aware and yet a fecal analysis may reveal an enormous excess of poison-producing microbes. How comes it such people do not suffer? If such bacteria do harm why are not these persons injured? They are, but they do not know it. This


Pyramid
Medullary
Internal
Substance
A
Pyramid
Papilla
Papilla
Calyx
Infundibulum
Infundibulum
A
Pelvis
Cortical
Infundibulum
Papilla
Border
Ureter

SECTION OF KIDNEY

is due to the existence of margins of safety in the defensive powers of our bodies.

In estimating the strength of bridges and buildings, architects always provide a large margin of safety. In the structure of our bodies the safety margins are much greater than human architects are accustomed to allow. Such important organs as the lungs, kidneys, adrenal glands of the kidneys and thyroid glands are in pairs and each one of the pair is more than capable of doing all the work ordinarily required of the two. The same principle of tremendous reserve power is true of the organs which are not in pairs, as the heart, liver and skin. Men have lived in good health for years after the stomach has been entirely removed because the small intestines have reserve powers enough to perform the double duty. Nature has provided these factors of safety to postpone that fatal day which finally comes to every machine when the mechanism is worn out at some point and is no longer able to perform its functions. Because of these anti-toxic reserve powers one may feel in good health long after the bowels have become a cesspool of putrefaction.

I have known many cases where fecal examinations have given a picture of one hundred per cent bacillus coli and even more venemous germs and yet the individuals whose colons were in this chronic condition felt quite well. This immunity from conscious sickness continues only so long as the body possesses a surplus of protective power.

CHAPTER VI

Recapitulation—The Defenses of the Body

OUR experience as an instructor of the Teacher-Nurse classes of the Health Education Society proves that even the average, intelligent, trained nurse may get badly mixed in her ideas as to how the poisonous, microscopic weeds get themselves planted in the intestines. Let me, therefore, briefly epitomise what I have said.

We have seen that civilized man has to contend not only with the wastes of his own body cells but also with the poisonous excretions of billions of putrefactive bacteria that continually infest the human intestines. These germs gain entrance through food.

No matter how freshly killed, every morsel of flesh food is always infected with billions of putrefactive bacteria which soon cause the meat to decompose and become putrid unless kept on ice. These germs excrete toxins as deadly as the venom of serpents. For this reason Indian tribes poisoned their arrows by dipping them in putrid flesh.

It is sometimes said that although these germs are not killed by cooking they are destroyed by the gastric juice of the stomach. This is not strictly true. Cooking destroys some of these germs, but not all unless pressure is used.

Some Germs Survive Digestive Mill

The Hydrochloric Acid of the stomach is still more fatal to these dangerous organisms. But the digestive juice does not kill all. To many of the germs, the Hydrochloric Acid of the stomach merely administers a knockout blow which puts the microbes out of commission for twenty-four hours. These paralyzed bacteria are called spores. Nature figures that they will be safely out of the body before they come back to life. Under normal conditions this would be so. Food does not remain more than four hours in a healthy stomach and it is then passed on into the small intestines for another four-hour period. The residue which is not absorbed by the lacteals then passes into the colon ready to be ejected from the body at a convenient opportunity.

The whole process of digestion at longest should not take more than twelve hours. To hasten the ejection of the germs from the intestines so that they may be cast out before they can germinate, nature sets up a peristaltic series of undulating movements whenever food is taken and these waves sweep down the whole length of the alimentary tube with the purpose of pushing along the residues of earlier meals. The frequency with which animals in a state of nature get rid of the waste products of digestion is astonishing.

House-broken pets like the cat and dog have, to a large extent, lost the power of frequently extruding the residuum of food, but other domestic animals such as the horse and cow that have not been trained to defy the calls of nature defecate sixteen to twenty times a day.

Deferred Defecation Gives Germs a Chance

Animals in the wild state get rid of the wastes of digestion many times daily. This is also the custom of barbarians and of all human beings until they become civilized. Human babies are little savages and like wild animals defecate at frequent intervals the moment the impulse is felt. But they are soon trained to defer their desires until a convenient season and in this way the unnatural and injurious custom of defectating once a day only is all too readily formed. Our devitalized foods which have also been robbed of their cellulose or roughage facilitates the formation of this habit of constipation.

As a result of this prolonged retention of the wastes of our food within the body, the germs or spores which have been temporarily paralyzed by the Hydrochloric Acid of the stomach come to life in the lower bowel which is free from digestive juice, and multiply with astonishing rapidity.

These microbes manufacture irritating and dangerous poisons and health would very speedily be undermined were it not for the fact that nature has provided bodyguards to protect us against the action of these deadly germs.

Our First Line of Defense

The first line of defense is the Acidophilus bacteria of the intestines.

Putrefactive germs are rendered inert in any medium that is even slightly acid. It is for this reason that we preserve or pickle vegetables and other food in vinegar. In the Orient where there is no ice, the natives keep meat fresh (that is, they protect it against the action of putrefactive bacteria) by immersing it in sour milk. Nature employs microscopic acid-producing plants to protect the bowels against the invasion of putrefactive germs.

At birth, the intestines of infants are free from all bacteria but after the first few days the child's lower bowels are always found generously supplied with the friendly, protective acid-producing species of microscopic plants. No adult, human colon has ever been found free from germs. Latzer, MacNeal and Kerr have demonstrated that the average adult execrates daily thirty-three trillions of bacteria.

Health Depends on the Kind of Flora

It is now admitted by all microbiologists that other things being equal, the health of every person depends upon the kind of flora dominating the intestines. "Show me a person who has retained the natural Acidophilus Bacillus of childhood" said a veteran microbiologist to me the other day, "and I will show you a healthy man." This has been my own experience gained from the anlaysis of thousands of specimens. But unfortunately in too many cases, as a result of our unnatural eating habits, the native Acidophilus germs have been replaced by toxic microbes. The poisons these germs generate would soon produce old age and death if permitted to enter the blood stream. In many adults the natural Acidophilus bacteria have all been replaced by venomous invaders. Yet years may elapse before these unfortunate people become aware of the damage these germs are doing. This is due to

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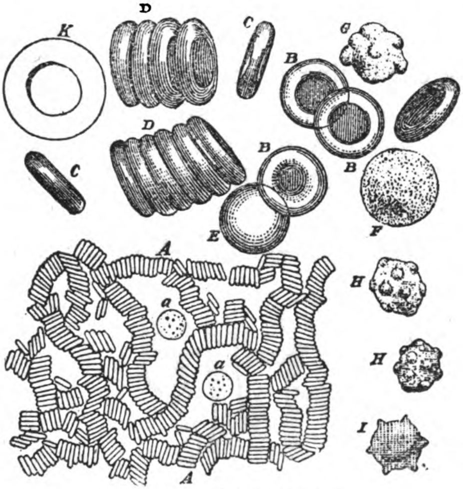
the fact that the blood stream and vital organs are protected by nature's second line of defense—the mucus membrane of the intestines.

Our Second Line of Defense

The skin of our bodies is a natural armour against all forms of poison with which we are constantly surrounded. Even the venom of serpents may touch us but is quite harmless so long as our armour of living leather remains unbroken.

In the same way the mucus membrane or inner



BLOOD CORPUSCLES

A, magnified about 400 diameters. The red corpuscles have arranged themselves in rouleaux; *a, a,* colorless corpuscles; *B*, red corpuscles more magnified and seen in focus; *E*, a red corpuscle slightly out of focus. Near the right-hand top corner is a red corpuscle seen in three-quarter face, and at *C* one seen edgewise. *F, G, H, I,* white corpuscles highly magnified.

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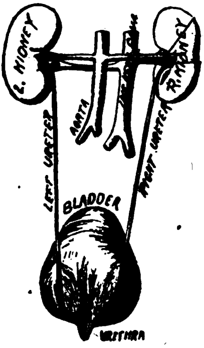
covering of the bowels protects us from poisons generated by enemy germs in the intestines. But the strongest defenses collapse under prolonged attack and after years of bombardment by indol, skatol and other virulent poisons produced by the bad bacteria the inflamed membranes break down and the toxins leak through and pollute the blood stream.

Third Line of Defense

Even then all is not lost; for the third line of defense, made up of certain glands and organs now comes to the rescue. Chief of this line of defense is the liver, which renders the toxins harmless by chemically combining them with other elements.

But years of such over-work eventually breaks down every protective power we possess and this produces those degenerative changes we call old age and is the inciting cause of almost every form of ill health and of premature death.



Urinary System From Rear

Cathartics Do Harm

Most people instinctively feel that constipation is bad for the health and resort to various cathartics to remedy the condition. But all such drugs in the long run do more harm than good.

The first principle of the Health Education Society is to impress upon mothers the importance of taking care that their children form the natural habit of frequent bowel movements. Under the conditions of restraint imposed by the decencies and conventions of society this is difficult. But yet much can be done. The main thing is to see to it that the children receive each day a certain amount of ripe, uncooked fruits and of the green, leafy vegetables, drink enough water and make a regular and earnest effort after every meal to secure a bowel movement, no matter whether the school bell is ringing or not.

The ability to perform such duties of nature at will is one of the best foundations for success in life. This art cannot be gained without a persistence that permits of no exceptions.

The question is often asked: "Can the habit of natural bowel movements be regained after it has been lost for years." In most cases it can, when the proper methods are known and followed with persistence. An important part of the work of the National Health Education Society is consecrated to educational efforts along these lines.

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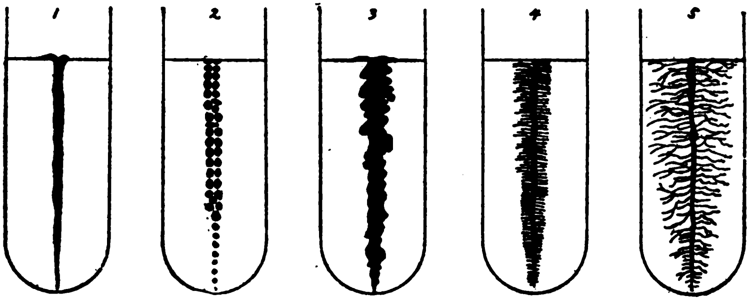


STAB CULTURES

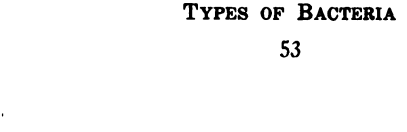
CHAPTER VII

How Fecal Flora Are Analyzed

THE regulation fecal analysis or examination of bowel excreta as performed in practically all pathological laboratories simply consists in a more or less thorough search for such abnormal constituents as undigested starch granules, epithelia, parasites, ova and occult blood. All this is well enough so far as it goes.

The thirty trillions of bacteria that the average human being expels every day from the rectum are ignored as if non-existent. It is a case of out of sight, out of mind. Bacteria are much too small to be seen by the low power objectives usually employed in fecal analysis. Yet many species of these bacteria generate virulent poisons which are absorbed into the blood and little by little sap the vitality. Our very life in the long run depends on the kind of microbes the colon habitually harbors.

Following the lead of the great fecal laboratories of Europe, the Health Education Society specializes in examining the excreta with particular regard to their bacteriological content.



TYPES OF BACTERIA

How Fecal Flora Are Analyzed

The usual routine analysis is made as a matter of course but our chief work begins where commercial laboratories leave off. The ordinary examination can be completed within an hour. The modern bacteriological analysis cannot be done in less than two days.

The newer method mainly consists in jailing the germs in glass prisons where they can be watched at their work and identified by what they do. The analyst* begins by arresting some of the microbes. First he places a speck of the feces in a test tube of sterilized water to which a few grains of table salt have been added. From this sample of diluted excreta most of the tests are then made.

Next a little of this fecal solution is spread on glass slides and colored with various analine dyes according to the Gram method. For some unknown reason, many species of bacteria refuse to be dyed certain colors but gladly accept other hues. This fact gives us much help in our work of identification.

For example, the friendly, little Acidophilus germs that police the intestinal tract (unless they've been poisoned off) always appear a dark blue when stained by the Gram method., but the Coli culprits refuse the blue stain but are readily dyed a bright red.

The technician tabulates the different kinds of bacteria by the staining method and then proceeds to confirm these findings by other tests. For so great is the number of species into which germs

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* N. B. By the term *analyst* we do not refer to the genius who "splits fifty-fifty" with drug stores that display the legend "ANALYSIS ONE DOLLAR."

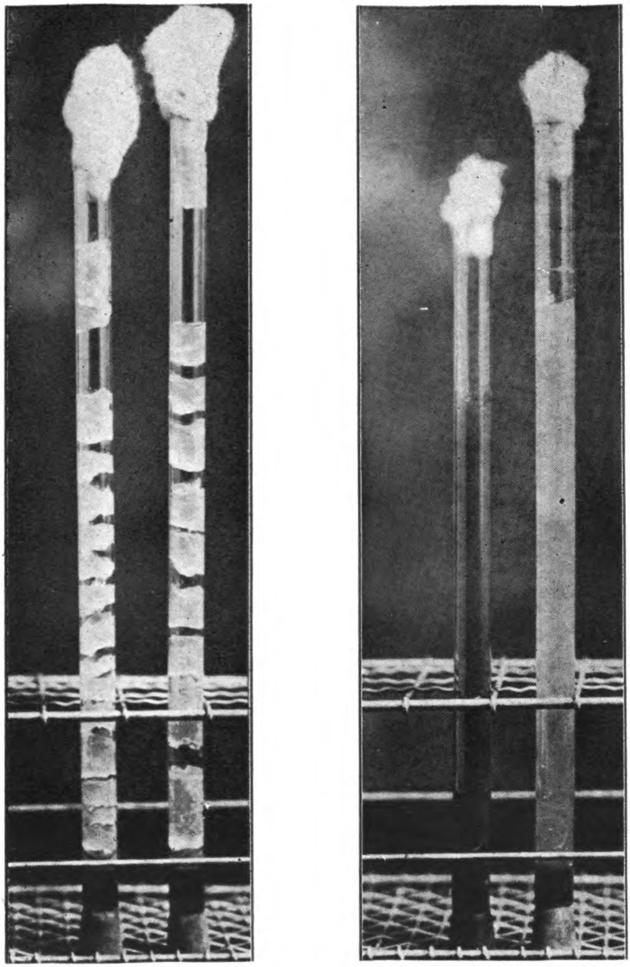


FIG. 1—GAS POCKETS **FIG. 2—NO GAS**

Veillon Tubes of one per cent. lactose agar cultured with feces and incubated 48 hours at body temperature.

are divided and the good and the bad are often so similar in form but so different in moral character that the analyst refrains from giving his final classification till he has cultured his prisoners and watched them at work for "by their works ye shall know them" holds true for microbes as much as it does for men.

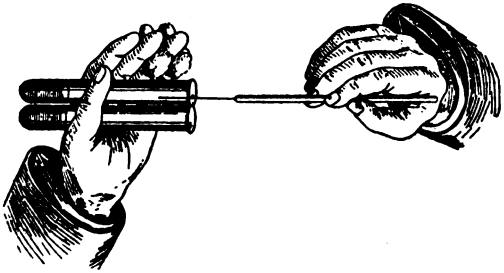
The next series of tests consists in making cultures. When placed in an incubator in suitable food such as jelly, bacteria propagate rapidly and as they increase in numbers they arrange themselves in a definite pattern typical of the species to which they belong, much as college boys form the symbol or initials of their Alma Mater by arranging themselves in mass formation on the campus grounds at their annual reunion. Seen as individuals it is difficult to tell to what institution students belong, but when the boys put themselves in mass formation on field day to make some symbol or word such as YALE or N. Y. U. their college or class is at once known. Microbes do the same thing whenever they get a chance. Indeed this habit of growing together in clusters to assume a typical pattern seems inherent in all one-celled organisms.

Every man—or at least every man's body—is merely a colony of cells in mass formation. Given a few uni-cellular organisms to examine, a micro-biologist might have difficulty in deciding whether the units belonged to an elephant, a bird or a man but a baby can tell the difference between human and elephant cells if the child sees them in mass formation because an elephant cell-colony always appears like a four-legged balloon with a rope at each end, and a human cell-colony looks like a fat walking stick split at the end like a clothes-pin.

Bacteria do not assume the colony form unless they are reared in solid food like gelatin. When grown in fluid media like human feces, each germ keeps himself free from entangling alliances and travels around as a separate entity.

The analyst commences his series of cultural tests by inoculating a tube full of warm, lactose agar with a drop of the fecal suspension. This warm, germ-impregnated jelly is then poured into a petri dish and a few minutes later, when the mixture has become cool and firm, the dish is placed in an incubator and kept at blood-heat for forty-eight hours.

The incubators used for this work are equipped with a delicate mechanism that keeps the thermometer at a set point. The slightest change in temperature turns the electric bulbs on or off as the case may require and in this way any desired degree is automatically maintained. This is important



INOCULATING MEDIA WITH GERMS

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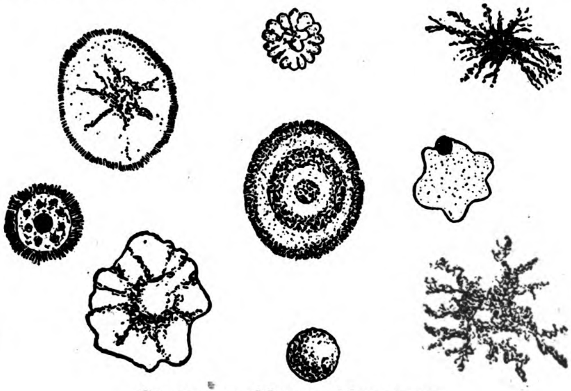
because bacteria propagate at different temperatures according to their species.

After forty-eight hours, the plates are removed from the incubator and put under the 'scope. The thin film of jelly will now be seen covered with spots. Each spot is a colony composed of billions of germs clinging together.

The drop of fecal solution with which we had inoculated the jelly was obtained from a tube of water polluted by a mere speck of human excreta. In this way, we made sure that only a very few bacteria were scattered through the media when we put the dish in the incubator. Now, in forty-eight hours, each individual microbe has become the ancestor of more germs than there are people on the globe. Each speck or "colony" is a world but the inhabitants are so small that the entire population (massed in design like college boys, to proclaim their class) is only a speck often invisible to the unaided eye.



Colonies Much Magnified

The various species of microbes as revealed by the colonies are easily tabulated. But all of the bacteria in the dish will be found to be of the friendly or comparatively harmless type because the more poisonous species cannot propagate in the presence of air. Dangerous individuals may be in the dish but no 'scope is powerful enough to disclose single germs in such media.

If colonies of our Bacillus Acidophilus friends be present they will appear under the microscope as peculiar moss-covered specks, pinhole in size, and in shape like tiny sea urchins. Colonies of Coli are larger, oblong and smooth and look like little footballs.

In order to discover the anaerobic, toxic, gas-forming bacteria which cannot live in the presence of oxygen we use long glass tubes filled with lactose-agar jelly stoppered at the lower end with a rubber cork and above with some cotton wool. During incubation anaerobic germs, like Welchi, congregate at the bottom of the tube, where there is no air and form large pockets of gas. Higher up facultative bacteria make smaller breaks in the jelly. Characteristic colonies of Bacillus Acidophilus may appear in the tube but without any bubbles for these friendly bacteria never form any gas.

The anlayst goes on to employ other cultural methods such as the double inverted tubes of litmus milk and of lactose broth which are very important tests but which we cannot now stay to describe.

Many fecal specimens come to the laboratories of the Health Education Society with the request

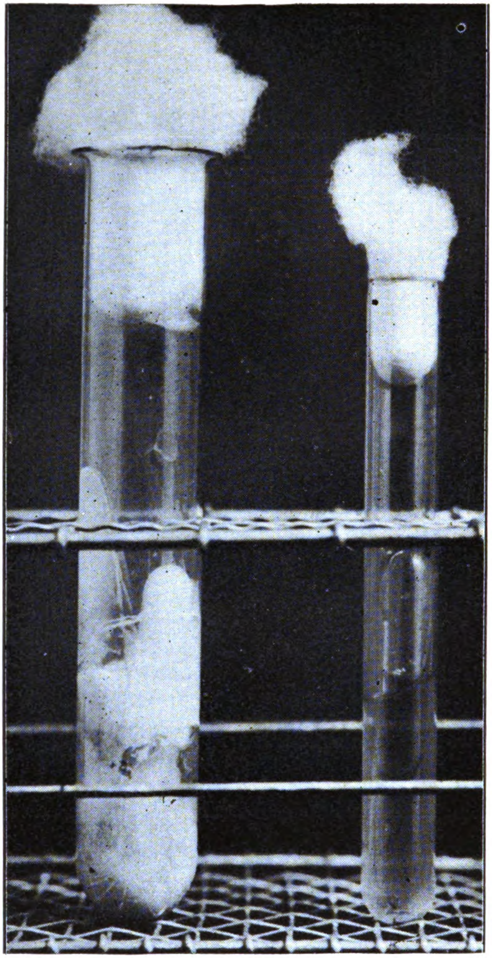
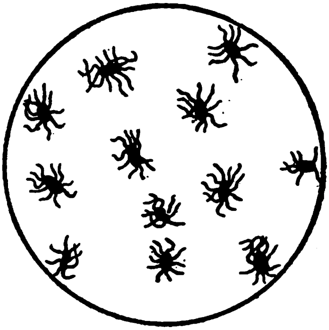


Fig. 1 Fig. 2

LITMUS MILK AND LACTOSE BROTH TESTS

In Fig. 1 the presence of putrefactive bacteria is shown by the broken curd, much whey, and gas in the inner tube. The inner tube of the Lactose broth (Fig. 2) also shows gas.

that the report be returned the same day. Sometimes even physicians make such a request. I have outlined a few of the methods of cultural, fecal analysis in order to show that the examination cannot be hurried. The bacteria must be given forty-eight hours at least in which to propagate so that the technicians may discover whether the dominant species are friends, neutrals or foes.



Germs With Flagella

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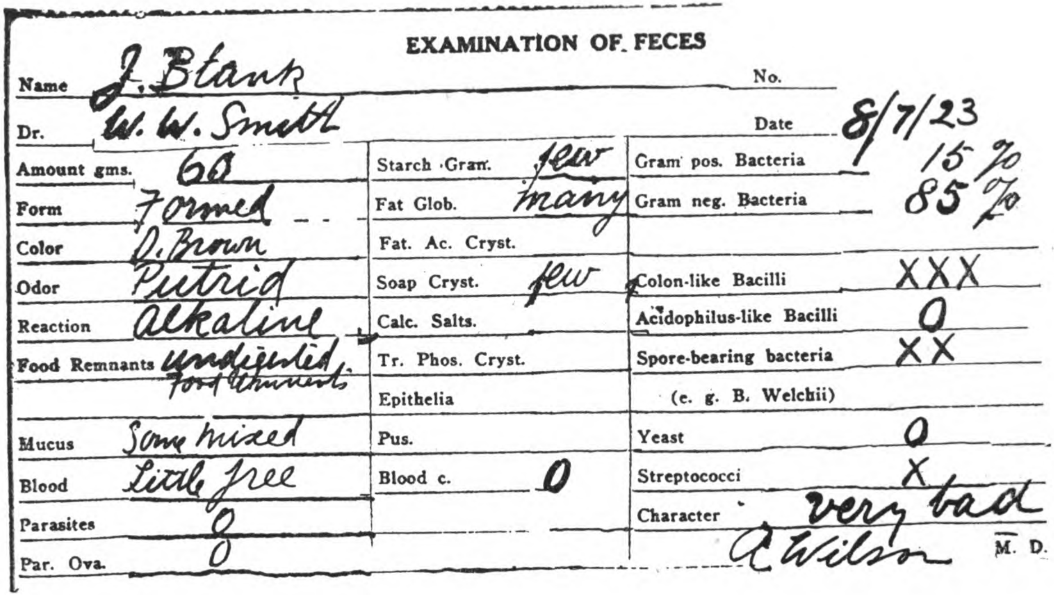


EXAMINATION OF FECES

Name	J. Blank			No.	
Dr.	W. W. Smith			Date	8/7/23
Amount gms.	60	Starch Gran.	few	Gram pos. Bacteria	15%
Form	Formed	Fat Glob.	many	Gram neg. Bacteria	85%
Color	D. Brown	Fat. Ac. Cryst.			
Odor	Putrid	Soap Cryst.	few	Colon-like Bacilli	XXX
Reaction	Alkaline	Calc. Salts.		Acidophilus-like Bacilli	0
Food Remnants	undigested food remnants	Tr. Phos. Cryst.		Spore-bearing bacteria	XX
		Epithelia		(e. g. B. Welchii)	
Mucus	Some mixed	Pus.		Yeast	0
Blood	Little free	Blood c.	0	Streptococci	X
Parasites	0			Character	very bad
Par. Ova.	0			R. Wilson	M. D.

HOW TO SECURE AN ANALYSIS

The announcement in the public press that the Health Education Society was organized primarily to aid the needy has resulted in scores of people attempting to secure free service who are not legitimate objects of charity.

One gentlemen who had been ordered Acidophilus cultures by his physician sent his chauffeur twice a week for months for the cartons and when an explanation was demanded as to why he had taken no notice of the bills that had been rendered he replied that he supposed that the milk was free.

A lady, unknown to us, secured extensive and valuable X Ray and other service by the simple expedient of donning modest apparel probably borrowed from one of her maids.

Such experiences have compelled the officers of the Society to use much more caution. We urge our friends to be perfectly frank in the statement of their case. For example, if you would like a fecal and urinalysis but are really not able to pay for it write to us as follows:

Secretary,
Health Education Society,
2050 Amsterdam Avenue,
New York, N. Y.

Please send me containers for urine and fecal specimens with directions. I enclose my pastor's endorsement to the effect that I am not able to pay for such service.

Very truly yours,
I. M. Needy

In response to a letter like the above, the Health

Education Society makes the required analysis and examinations together with the diagnosis and recommendations of the physicians absolutely without charge to any person in the U. S. A. without reference to race, creed or color.

If you are in moderate circumstances, write to us as follows:

> Please send containers for urine and fecal specimens. I enclose $3.00 to cover the actual cost of analysis.

In response to this request, the Society gives full service as before without further charge.

If you are well blessed with this world's goods please write as follows:

> Kindly send me receptacles and directions for fecal and urine analysis. I enclose my check for $........, to extend the work of the Society.

The person who makes a generous donation receives no more than the widow who gives nothing, except the joy of well-doing.

CHAPTER VIII

The Story of a "Once-a-Day" Man

DURING the hottest spell of the summer when most bacteria are especially active a gentleman consulted one of the physicians of our Advisory Staff complaining of indigestion with much gas and a good deal of pain in the head.

The doctor sent fecal and urinary specimens to the laboratories of the Health Education Society which showed the presence of a very high percentage of putrefactive bacteria and a total absence of B. Acidophilus. (See facsimile of report, page 64.) The doctor diagnosed the trouble as being due to "chronic intestinal stasis" or in other words to habitual constipation.

But the patient contended, as do all "once-a-day" people, that the distress could not come from constipation, as he was "regular every day." Carmine motility tests, however, proved that the regular food residues always consumed two or three days on their journey. This was confirmed by the X-Ray of the colon taken forty-eight hours after the patient had breakfasted on cream-of-wheat mixed with barium. (See page 71.)

Urinalysis revealed excessive indican, proving that putrefactive poisons were polluting the blood stream (Fig. 1, page 74) and this was confirmed by Litmus Milk, Lactose Broth and Veillon Tube cultures and other tests. (See page 62.)

The physician gave no medicine but prescribed bran and agar with each meal and mineral oil at night and put the patient on a low protein diet (no meat) with an abundance of green vegetables, salads, and dates, olive oil, fresh sweet butter, cream and twenty-four ounces of Bacillus Acidophilus Milk daily. Two ounces of milk sugar were taken before breakfast in two glasses of water and as much fresh air and gradually increased exercise as possible. At the end of the second week the bacillus coli, so abundant in the Microscopic Field on page 72 (Red Germs) had almost disappeared and had given place to billions of anti-putrefactive, friendly bacteria germs (the Blue Rods, page 73).

The bacillus Welchi and Coli which had caused the gas pockets in the tubes as shown in Fig. 1, page 56, at the end of three months had given place to Acidophilus-like bacilli (Fig. 2, page 56) which form no gas pockets.

Urinalysis now revealed no indican (Fig. 2, page 74), and the fecal analysis showed a total change, as may be seen by the report on page 70.

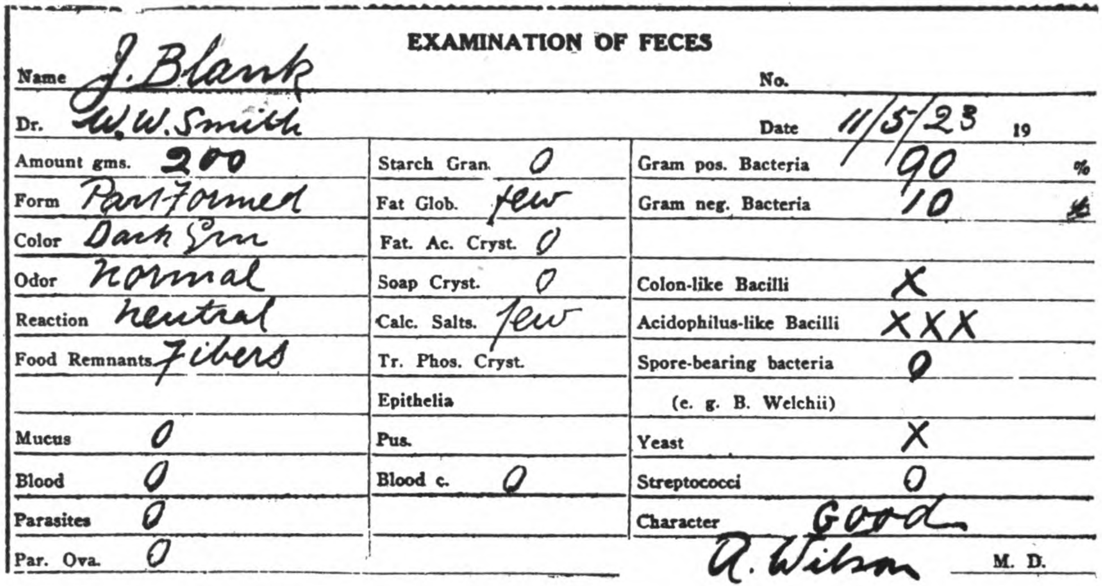
The headache and internal distress went away when the toxic bacteria departed.

Many people smile at the gospel of three evacuations daily considering such teaching fanatical. The Life Extension Institute of New York is extremely conservative and yet that Institute in its bulletins heartily commends the practice of three motions daily. The official handbook of the Institute entitled "HOW TO LIVE" by Prof. Irving Fisher and Dr. Eugene L. Fisk on page 54 and 55 says:

"The normal man and woman should find no difficulty in having complete movements regularly two or three times a day by merely living a reasonable life, being careful especially to avoid overfatigue, to include sufficient bulk in the food, to take regular exercise, including, in particular, breathing exercises, and to maintain an erect carriage.

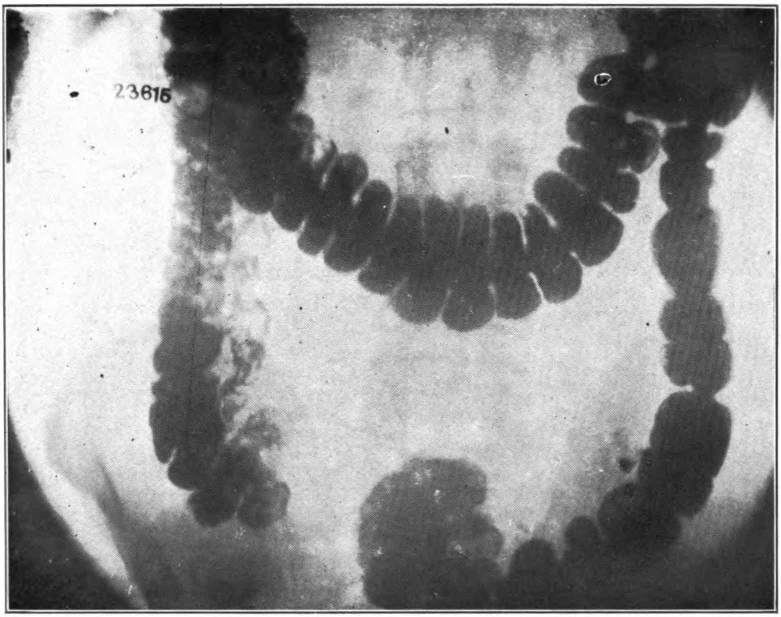
"Observations on the manlike apes show that they defecate three or four times a day. Few of the human family have such ideal movements. Millions are conscious of some shortcoming in this regard, and doubtless millions more suffer from some shortcomings of which they are not conscious. Many believe they have free movements when actually they are suffering from a sluggishness in the rectum and other parts of the lower intestine. A rectal examination often reveals unsuspected fecal residues.

The natural instinct to defecate, like many other natural instincts, is usually deadened by failure to exercise it. Civilized life makes it inconvenient to follow this instinct as promptly as, for instance, a horse does. The impulse to go to stool, if neglected even five minutes, may disappear. There are few health measures more simple and effective than restoring the normal sensitiveness of this important impulse. It may require a few weeks of special care, during which cold water enemas at night, following evacuation by paraffin oil injection, may be needed. It would be an excellent rule to visit the closet immediately after the noon and evening meals, as faithfully as most people do after the morning meal, until the reflex is trained to act at those, the most natural, times for its action."

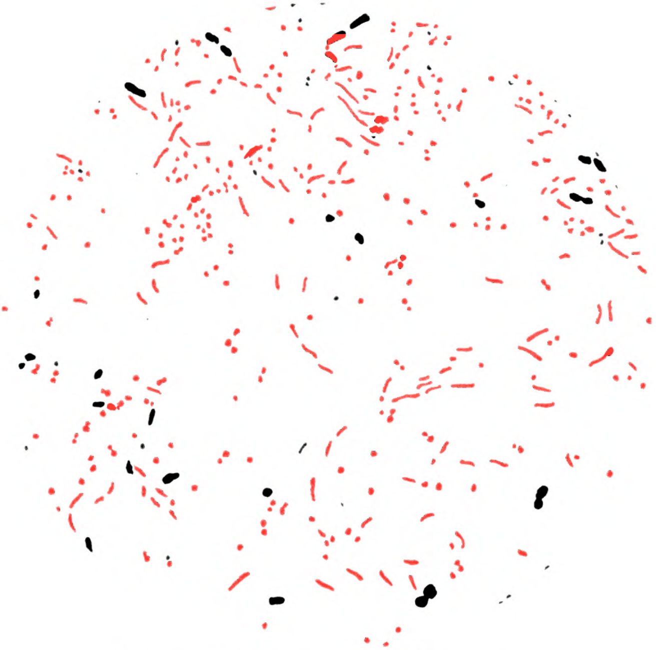


EXAMINATION OF FECES

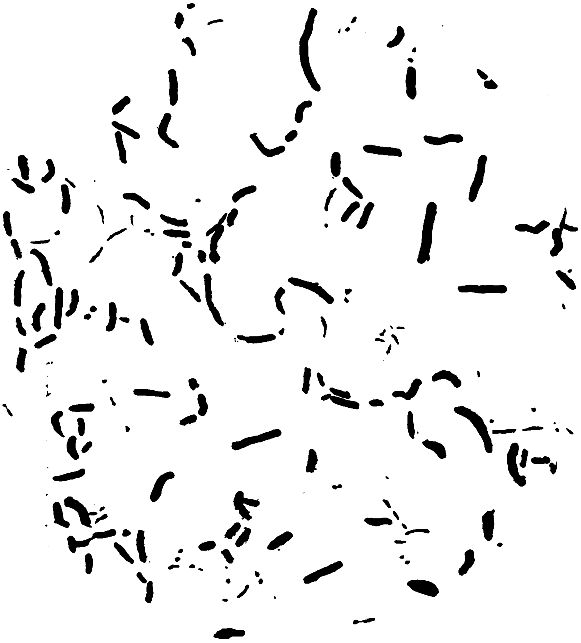
Name	J. Blank			No.	
Dr.	W. W. Smith			Date	11/5/23 19
Amount gms.	200	Starch Gran.	0	Gram pos. Bacteria	90 %
Form	Part-formed	Fat Glob.	few	Gram neg. Bacteria	10 %
Color	Dark Grn	Fat. Ac. Cryst.	0		
Odor	normal	Soap Cryst.	0	Colon-like Bacilli	X
Reaction	neutral	Calc. Salts.	few	Acidophilus-like Bacilli	XXX
Food Remnants	Fibers	Tr. Phos. Cryst.		Spore-bearing bacteria	0
		Epithelia		(e. g. B. Welchii)	
Mucus	0	Pus.		Yeast	X
Blood	0	Blood c.	0	Streptococci	0
Parasites	0			Character	Good
Par. Ova.	0			A. Wilson	M. D.



X-Ray of Colon Opaque With Barium Eaten 48 Hours Previously



HIGHLY MAGNIFIED FECAL BACTERIA
Red Stain, Putrifactive Coli; Blue, Welchi. No Acidophilus.



SPECIMEN FROM SAME PATIENT AFTER TWO WEEKS' DIET OF ACIDOPHILUS MILK

(Acidophilus = Blue Rods)

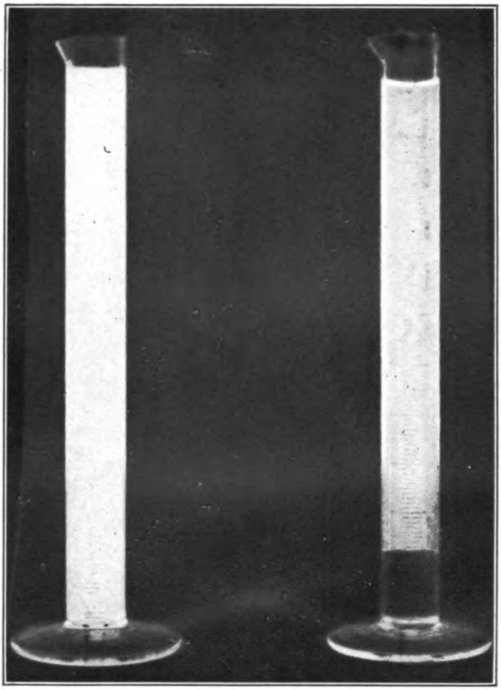


Fig. 2 Fig. 1

Obermayer Urinalysis Test Showing the Chloroform at the Bottom of Fig. 1, Dyed Blue-Black With Indican

CHAPTER IX

How An Incompetent Valve Causes Intestinal Toxemia

THE Secretary of the Health Education Society received a typical letter the other day as follows:

> "Secretary,
> Health Education Society.
>
> The report from your fecal laboratory shows that my wife has a very high percentage of toxic bacteria. Your analysis of my own specimen records a much lower percentage of poisonous germs. Yet your office writes me that I am suffering from intestinal toxemia but that my wife is not. There must be something wrong somewhere."

The physician-in-charge replied:

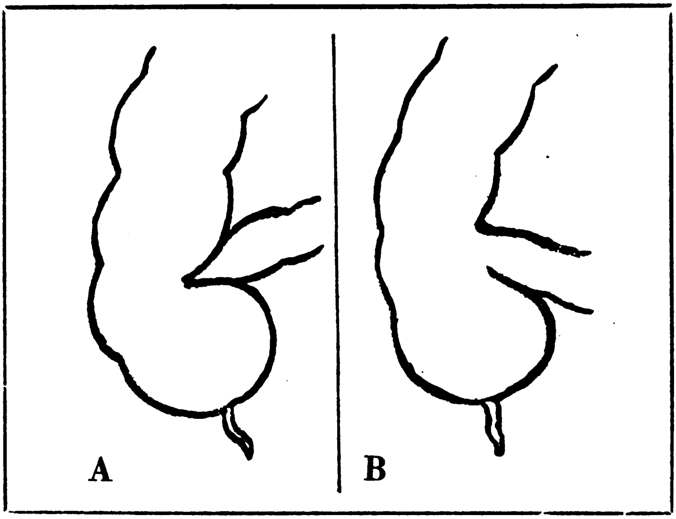
> "You are quite right in thinking that there is something wrong but the trouble is not in our Medical Staff but in you. The defensive powers of your body are much impaired and for this reason your whole system is being flooded and poisoned by the excretions of the toxic bacteria in the alimentary canal.
>
> On the other hand, your wife shows no symptoms of general systemic poisoning notwithstanding the fact that her fecal analysis reveals a higher percentage of toxic bacteria than your own. The reason is that the defensive powers of her body are not yet so impaired and as a consequence the poisons generated in the colon are confined there and do not pass from the lower bowel into the blood stream."

It must be remembered that after the nourishment of food has been absorbed into the blood through the walls of the small intestines the residue is passed on into the colon or lower bowel and stored in that sewer until a convenient time comes to expel this refuse from the body. In this colonic garbage pail there are no antiseptic digestive juices to prevent putrefaction and as a result the proteolytic bacteria generate poisons with great rapidity. But they cannot do much damage because the walls of the lower bowels permit of but little absorption. My old teacher of physiology used to say "the small intestines are made of blotting paper but the colon is a rubber tube." This is not strictly true but it serves to emphasize the fact that the walls of the small intestines are specially built to permit liquids to pass through them into the blood while the colon is devoid of villi and lacteals and is simply a sewer.

Now intestinal toxemia is often due to the unfortunate fact that the putrefying mass of corruption in the lower bowel sometimes returns into the small intestine. This cannot happen in normal persons because the small intestine is separated from the colon by a trap-door or valve which is designed to open only one way. This is called the ileo-cecal valve.

The object of this trap-door or valve is to permit the refuse of the digested food to pass out into the colonic sewer after all that is of value to the body has been absorbed into the blood through the porous walls of the small intestine. But when the wastes have passed out into the lower bowel they cannot return as pressure from without serves to close the valve more tightly.

In many people, this trap-door does not function because it has been injured. Such people are said to suffer from an incompetent ileo-cecal valve. There is much evidence to prove that this incompetence may be caused by constipation. When the wastes of digestion are permitted to remain in the lower bowel longer than is necessary or natural, excessive putrefaction takes place and the irritating poisons generated by the toxic bacteria inflame and degenerate the membranes especially the delicate mechanism of the ileo-cecal valve with the result that this trap-door eventually gets out of commission and permits the poisonous sewerage of the colon to leak back into the small intestine. Now the walls of



(*A*) Competent Ileocecal Valve. (*B*) Incompetent Valve

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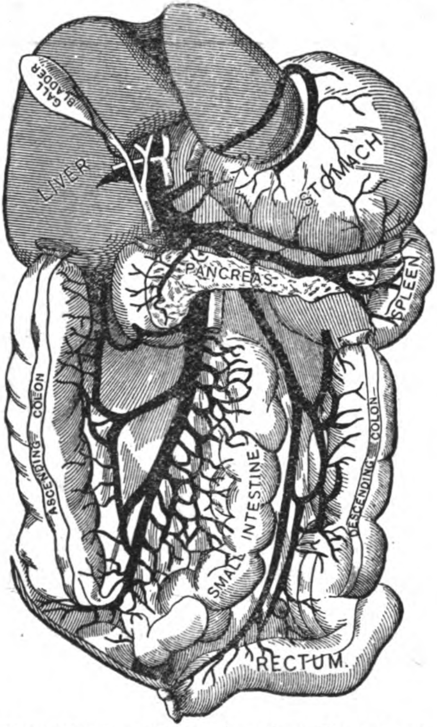
the small intestines as we have seen are specially designed to enable liquids to pass through them into the blood-stream. The result is that when poisonous matter from the colonic sewer backs up through the incompetent ileo-cecal valve into the small intestine the toxins rapidly pass into the blood and eventually cause general systemic poisoning, ill-health and old age.


GALL BLADDER
LIVER
STOMACH
PANCREAS
SPLEEN
ASCENDING COLON
SMALL INTESTINE
DESCENDING COLON
RECTUM.

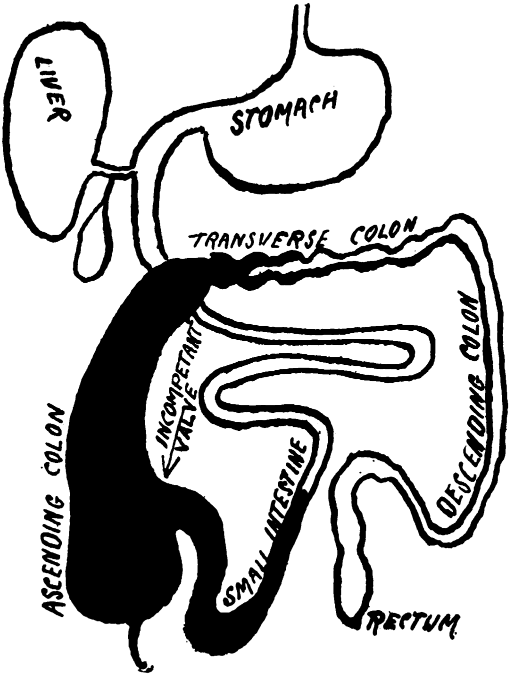
THE PORTAL VEIN AND ITS BRANCHES

But this condition of "auto-intoxication" may not manifest itself till years have passed because directly the poisons leak through the intestinal tube into the blood-stream they are carried by the portal vein to the liver and are there neutralized or made harmless by union with other elements if that organ is competent to perform its marvellous chemical synthesis. The converted, neutralized products of putrefaction are then passed on to the kidneys to be filtered out of the blood and expelled from the body by way of the bladder. Therefore, urinalysis and other tests enable us to calculate the extent to which poisons generated in the colon are being absorbed into the blood.

Statistics gathered from the records of X Ray specialists seem to prove that one person out of every six has an incompetent ileo-cecal valve.

A person may show a very high percentage of putrefactive bacteria in the feces and yet may be free from auto-intoxication because the virus generated by the enemy microbes in the intestines may all be expelled from the body per the rectum. Another individual who has reformed his manner of living may have a majority of good bacteria and comparatively few of the putrefactive enemy-germs in the intestines and yet may suffer to some extent from general systemic poisoning because of the one-way trap-door separating the small intestine from the sewer (colon) may be out of commission and fail to keep shut thus permitting the sewerage to pass back into the small intestine and to be there absorbed into the blood and a worn out liver may fail to do its part in destroying the poisons.

Surgeons sometimes attempt to mend an incompetent ileo-cecal valve. But the operation generally


LIVER
STOMACH
TRANSVERSE COLON
INCOMPETANT VALVE
ASCENDING COLON
SMALL INTESTINE
DESCENDING COLON
RECTUM

INCOMPETENT VALVE, ASCENDING COLON AND SMALL INTESTINE DISTENDED WITH BELATED FECES (*From an X-Ray*)

benefits the doctor more than the sufferer. The safer plan is to turn the colonic sewer into a garden by the reimplantation and cultivation of the little, native, protective plants that naturally disinfect and prevent the growth of the noxious poisonous germs.

CHAPTER X

Weeding the Garden and Replanting the Protective Flora

MOST people know little and care less about the condition of their intestinal garden.

Everybody knows something of the value of urinalysis, but comparatively few realize how much can be ascertained as to their physical condition by a bacteriological examination of the feces by the modern cultural and microscopic methods. Such an analysis is always the first step in a scientific examination of the physical condition by the methods of modern medical science.

In our laboratories the history of patients when compared with the reports of their fecal anlaysis shows that a high per cent of putrefactive bacteria and a sluggish bowel action invariably go together.

A long continued condition of constipation will result in the loss of all the native, friendly bacteria. On the other hand, absence of all such aciduric bacteria greatly retards bowel movement. Therefore, in attempting to restore the habit of frequent and natural defecation it is absolutely necessary to restore the native Acidophilus Bacillus to the lower intestines. Fortunately this task is accomplished by modern, scientific methods without very great difficulty or expense.

The First Line of Defense Can Be Restored

The plan is as follows:

First. See to it that the per cent of putrefactive

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bacteria entering the stomach is reduced to the minimum.

To do this,

(a) Thoroughly cleanse the teeth, tongue and mouth before and after each meal.

(b) Avoid an excess of animal protein and see to it that meat if eaten at all is fresh, and, therefore, as free as possible from putrefactive bacteria.

(c) Introduce into the food a generous supply of the native friendly aciduric bacteria. The most practical way of accomplishing this is by taking the Bacillus Acidophilus cultures in sterilized milk.

(d) Take care that some undigested carbohydrate reaches the colon to serve as food for the good germs. (This is best done by taking a tablespoonful of sugar of milk with each feeding of Acidophilus Milk. Sugar of milk is very slowly assimilated and some of it generally reaches the bacteria in the lower bowel before it is digested and absorbed.

Persistence in this method will reform the fecal flora in the course of a few weeks or months.

Discomfort at First

It must be admitted that this kind of intestinal gardening cannot be carried to a successful conclusion without a little discomfort for the first week or ten days. This is due to the fact that the sugar of milk for a time enables the bad germs to produce

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much gas. But these enemies soon give up the struggle if fresh cultures of the friendly bacteria are persistently planted.

This method of combating intestinal toxemia with acid-producing microscopic plants was first used by Metschnikoff of the Pasteur Institute in Paris. Metschnikoff employed a special variety of Bulgarian germs for this purpose because this species generates a high percentage of acid. For this reason the Bulgarian Bacillus have a greater anti-putrefactive action than any other kind of bacteria. This can be demonstrated readily in the test tube. Unfortunately Bulgarian Bacillus cannot be made to thrive in the alimentary canal, nor will the lactic acid-producing bacteria of buttermilk or of any other species of germ that makes milk sour live in the bowels except B. Acidophilus, which readily acclimatize themselves to the human intestines.

Any kind of carefully prepared sour milk is, to some extent, beneficial to those suffering from intestinal toxemia for two reasons, first, because if properly prepared it has been freed from putrefactive bacteria by sterilization and, secondly, sour milk forms lighter curds and is, therefore, more easily digested than sweet milk. But in our experience, which has covered many thousands of cases, no species of aciduric disinfectant bacteria introduced into the human intestines will survive there except the native B. Acidophilus. This fact has been known to science for over ten years, yet many people continue to plant all kinds of sour milk in their stomachs under the delusion originally promulgated by Metschnikoff that any kind of lactic acid-producing bacteria will thrive in the colon.

Tablets Useless

Right here let me sound a note of warning.

So soon as scientific research gives publicity to some new truth of value. there is a rush on the part of many manufacturer's to capitalize the new discovery to their own profit and gain. For example, all known kinds of vitamins can be had in unlimited abundance for little money at the green grocery and milk depot, but when we endeavor to capture these elusive factors of life and imprison them in tablets and bottles, most of them die. Yet the papers are flooded with vitamin advertisements mis-directing our feet to the drug store.

It is the same with Bacillus Acidophilus. Milk cultured with these tiny acid producing plants is cumbersome to transport and spoils in a week if not kept on ice. For these reasons, it is impracticable for drug stores to distribute B. Acidophilus Milk. The public are, therefore, urged to buy B. Acidophilus imprisoned in tablets and vials and to make their own Bacillus Acidophilus Milk. Even if these tablets contain pure, viable organisms of B. Acidophilus (and, doubtless, they sometimes do, though we have never yet drawn a lucky package) yet it is impossible for the average housewife to make Acidophilus Milk. First, because no one but an experienced microbiologist can prevent contamination with wild germs. Secondly, because milk cannot be sterilized except when subjected to a fifteen pound pressure for a period of thirty minutes and the average person has no autoclave and other necessary apparatus. Thirdly, the organisms cannot be properly cultured except in an automatically regulated and scientifically adjusted incubator.

Acidophilus Milk is admittedly costly and bulky, but until science discovers some better way to convey the friendly germs to patients most physicians will continue to prescribe Bacillus Acidophilus to be taken in milk that has been cultured in a reliable laboratory or not at all.

Bass, who is a great authority, in an article entitled "Transformation of the Intestinal Flora;" Southern Medical Journal, Jan., 1923, says:

> "Commercial interests have already placed upon the market B. Acidophilus in the form of tablets, capsules and liquids, and physicians are prescribing them. I recently examined some of these preparations on the market to determine the number of viable B. Acidophilus contained therein.
>
> "In the instance of tablets, none of those examined was found to contain as many as 1,000 viable bacteria of any kind per tablet. If it should be granted that all the viable bacteria present were B. Acidophilus, it would take more than 1,000,000,000 tablets, or more than 20 tons, to contain as many bacilli as are contained in 1,000 cc, or the usual daily dose, of the acidophilus milk; the quantity found, by most investigators at least, to be necessary to transform the flora. Bacteria were more numerous

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in the commercial liquid cultures examined. If they were all B. Acidophilus, a patient would have to drink only about seven or eight gallons daily to get as many as he would in 1,000 cc of the acidophilus milk culture."

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CHAPTER XI

Counterfeit Acidophilus

"All Is Not Gold That Glitters" and All Is Not Acidophilus That Is So Labelled

THE Health Education Society was driven to the necessity of culturing Bacillus Acidophilus Milk because we found such difficulty in obtaining the genuine article for ourselves and our friends.

Analysis of fermented milk labelled B. Acidophilus put out by supposedly reliable laboratories is frequently proved on examination to be B. Bulgaricus or some other easily cultivated aciduric bacteria masquerading as Acidophilus. The substitution in some cases is doubtless by accident and not by design. The genuine, little, protective plants are very elusive.

You may inoculate sterile milk with true cultures of B. Acidophilus and feel sure no wild germ can gain entrance yet when the finished product comes from the incubator you may find the aciduric weeds of the air have broken in and have entirely taken the place of the pure cultures. For this reason, every batch is analyzed before bottling in the Health Education Society laboratories and all "cuckoo" cultures are poured down the sink. The rejected milk, of course, is a wholesome food but it is merely ordinary sour milk and powerless to change the intestinal flora.

Undoubtedly B. Bulgaricus is deliberately substituted by some makers because it is so much more easily cultured.

B. Bulgaricus so closely resembles B. Acidophilus in taste, in appearance under the microscope, and in its behavior in the test tube that it is sometimes said there is no way of telling one from the other except by feeding the milk to an animal or human being and then analysing the excreta. Bulgaricus never lives to reappear in the feces but Acidophilus is readily recovered.

But the experienced analyst can detect the difference by more direct and more simple tests. For example, B. Acidophilus attacks maltose and causes a decided acidity which can be easily recognized. B. Bulgaricus brings about no such change. When there is doubt transfers can be made into a one per cent maltose broth and the tubes incubated at blood heat.

Commercial firms are sometimes tempted to substitute B. Bulgaricus for Acidophilus for the following reasons:

(1) To most people Bulgaricus is rather more palatable than Acidophilus and, therefore, commands a readier sale as a beverage.

(2) The coagulum is less liable to separate from the whey in milk cultured with Bulgaricus and for this reason the counterfeit has sometimes a more smooth and pleasing appearance than the genuine.

(3) B. Bulgaricus is in its natural habitat in milk and can be cultured in that medium indefinitely without change. Acidophilus, on the other hand, is a native of the healthy intestines and will

not grow in a foreign media like milk unless constantly renewed by fresh cultures.

(4) B. Bulgaricus is much cheaper to make than B. Acidophilus.

Three dollars and fifty cents is charged for a carton of six eight ounce bottles by some laboratories. This is not too much for the **genuine** article.

THE DISPLACEMENT OF HARMFUL, PUTREFACTIVE BACTERIA BY HARMLESS ACID-FORMING ORGANISMS

(From The New Dietetics by J. H. Kellog, M.D.)

"The philosophy of this method is exceedingly simple. The B. acidophilus, introduced with the food, finds its way into the colon and there produces lactic acid and so develops a condition unfavorable to the growth of putrefactive bacteria, which do not thrive in an acid medium. Bienstock, Tissier and Martilly showed that in a medium containing one per cent. of sugar, a putrefactive flora does not flourish, an aciduric flora taking its place. The B. bulgaricus, a buttermilk germ, so closely resembles the B. acidophilus of the intestine that it was for a long time mistaken for it and was recommended by Metchnikoff to change the flora, which we now know it will not do, for it does not thrive in the intestine.

Two conditions are necessary for the success of this method:

1. The B. acidophilus must reach the colon in

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sufficient numbers to be able to produce enough lactic acid to acidify the colon's contents.

2. It is necessary that the B. acidophilus shall find in the colon the food necessary for its sustenance and by the aid of which alone it is able to produce lactic acid, viz., carbohydrate.

It is necessary that large quantities of very active cultures should be taken, and special measures must be adopted to supply to the B. acidophlius when in the colon the carbohydrate which it requires for efficient growth.

The B. acidophilus is probably always present in the intestine, but generally in such small numbers that it is overwhelmed by the putrefactive bacteria.

After the flora is changed, continue the same measures, moderated to keep the stools frequent and free from putrid odor. An occasional laboratory test should be made when possible."

CHAPTER XII

Excess Protein In the Diet Fertilizes the Poisonous Weeds In the Intestines

THE many marvelous ways in which the human body defends itself are by no means all understood, yet our greatest authorities are agreed that there is a limit to such surplus protective power. Our health depends on our margin of anti-toxic reserve.

We thoughtlessly draw on the Bank of Health as if there were no limit to our surplus. But the day comes when Nature meets our demands for further advances with the ominous words "no funds." Some men with tremendous natural reserve under fair living conditions may reach eighty or ninety years of age; others, through breaking the laws of nature, often ignorantly (e. g., by lack of exercise, as in the case of the writer), may find their defensive powers all shot to pieces and gone before they reach thirty. What then? Is there nothing left for such a one but to give up and die? Not necessarily.

Physiologists are fond of repeating that degenerated tissue cannot be restored. We suppose this to be true. Yet the natural defenses of the body may be broken down and a man may be in the Slough of Despond of auto-intoxication and yet regain health and happiness by taking Law Observance as his motto and by faithfully complying with the known conditions of health. According to the experts, my own tombstone should have been built before 1908,

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but I am a living, well-preserved monument to the rejuvenating power of "Law Observance."

I have no doubt that other sufferers from toxemia may do the same.

The first thing is to serve notice on the putrefactive bacteria that they cannot, in future, use your colon as a poison factory.

Mr. Edison, with his natural sagacity, seems to have recognized this principle before the bacteriologists called attention to it. When taking a vacation trip in the Tennessee Mountains, Mr. Edison tells us he called out to a weather-beaten old mountaineer: "My friend, what sort of crops do you raise in this country?"

"Lor', chile," was the reply, "we raise nothing here. The rabbits have to bring a lunch along when they pass through this country."

"That is the way I take care of my colon," said Mr. Edison. "I keep it in such a condition that if a germ gets in there it will starve to death."

The Suggestions Here Made Are Not Fads but Points Upon Which Specialists Agree

The rules outlined in the following pages to which, without taknig a particle of medicine, I owe my good health for the past fifteen years are not the fads of crack-brained fanatics, but the points upon which the world's greatest authorities on the alimentary canal such as Combe, Bouchard, Charrin, Jaffe, Von Noorden, Bunge, Tissier, Lane, Kellogg and Bassler are agreed.

I do not mean that all these great specialists employ precisely the same methods of combating auto-intoxication. Yet, differing as these and other experts do in the details of their technique, they agree on foundation facts, such, for example, as that animal protein is more toxic than vegetable and that all efforts to combat auto-intoxication are useless unless frequent, natural bowel movements be maintained.

(1) The Victim of Intestinal Toxemia Whose Defensive Powers Have Been Impaired, Must Not Permit His Daily Allowance of Protein to Greatly Exceed the Amount Required for the Growth and Repair of the Tissues.

Of course, life cannot continue without the kind of food we call protein. It is found in meat, fish, eggs, milk, nuts, legumes, cereals and to a small extent, in most fruits and vegetables. About ten per cent of our food should consist of this nitrogenous, repair material. This amount can be assimilated in the stomach and small intestines. Much more than this cannot be absorbed. The body has no provisions for storing surplus protein. Fuel-foods like sugars, starches and oils can be packed away for future use in the form of fat, but excess nitrogenous food is rejected by the digestive organs by being pushed through the ileo-cecal valve into the colon. Then the mischief begins. If adults continued the practice of infancy and promptly discarded the fecal wastes, as all other animals do, all would be well; but the conventions of civilization break down natural habits.

Directly the unabsorbed, excess protein reaches the colon, it is seized by billions of putrefactive bac-

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teria that always await it there. That is what these kind of microbes are for. They are the scavengers of nature. They quickly rid the earth of all flesh when it ceases to live.

Putrefaction cannot take place before an animal dies, but the moment the breath of life leaves a creature, these horrible bacteria rapidly invade all the tissues. These germs are not killed by cooking.

Dead animals should be buried. If left by the wayside, they quickly pollute the air and when sepulchred in a man's stomach, such parts of the corpse as escape digestion rapidly decay in the colon, for putrefactive bacteria, thrive best without oxygen in darkness, moisture and warmth.

Most people devour far more protein than their bodies need for growth and repair. Their ill-health comes from intemperance.

There is a popular fallacy that meat produces energy. People imagine that hard manual labor calls for much more flesh food than a sedentary occupation. This is not so. A day laborer requires much more carbo-hydrates and fats than a bookkeeper; but he does not need more nitrogenous food such as meat, fish or eggs.

(2) The Sufferer from Intestinal Toxemia Had Better Avoid Second-Hand Protein.

No nice person wears raiment from a second-hand clothing store. Yet such garments contain no bacteria compared with second-hand nitrogenous food which otherwise quite cleanly persons unthinkingly thrust into their bodies.

The protein we find in meat was originally manufactured from soil and sunshine by some kind of plant. Subsequently in the alimentary canal of some animal it was separated from other constituents and stored in those red and white muscles we call chops, chicken or steak. Every butcher's shop is a second-hand protein store.

Certified milk is not permitted to contain more than 10,000 bacteria per gram. Milk with 200,000 bacteria per cubic centimeter, or 6,000,000 per ounce, is promptly condemned by the Board of Health; but meat, as purchased at the best butcher stores, invariably contains more than 300,000,000 bacteria per ounce; that is, fifty times more bacteria than would be permitted in milk.

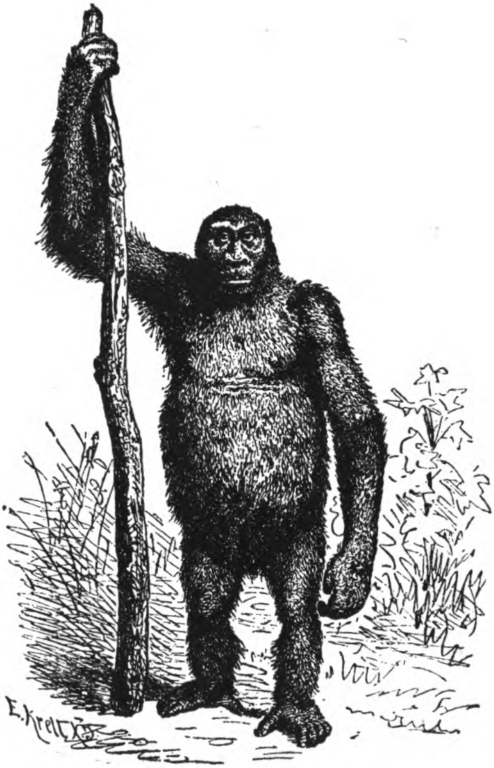
Moreover, the bacteria of milk consists almost wholly of harmless lactic acid-forming germs while the bacteria of meat is almost exclusively of the putrefactive, poisonous kind.*

Water containing a million colon bacillus per ounce would be at once condemned by any city, but the bodies of dead animals offered for sale in our best

*PUTREFACTIVE BACTERIA IN MEAT

Lister Institute, London		Battle Creek Sanitarium, U. S. A.	
	Putrefactive Bacteria per ounce		Putrefactive Bacteria per ounce
Turkey (fresh)	8,000,000,000	Round Steak	16,800,000,000
Turkey (storage)	30,000,000,000	Sirloin Steak	11,840,000,000
Chicken (fresh)	10,000,000,000	Tenderloin Steak	5,040,000,000
Chicken (storage)	28,000,000,000	Hamburger Steak	3,870,000,000
Beef (sirloin)	9,000,000,000	Roast Beef	16,800,000,000
Sausage	18,000,000,000	Small Sausage	19,800,000,000
Pork	8,000,000,000	Pork	3,781,000,000

meat markets invariably contain a thousand times more bacillus coli per ounce than this. Yet such flesh is never condemned unless other organisms, such as the tubercle bacilli, are also found. This is due to the fact that public sentiment has been somewhat enlightened about water and milk, but not about meat.



A King of the Forest

The fear expressed by many toxemia patients that they will not be adequately nourished if placed on a special vegetarian diet is not well founded. Recent tests prove that the vegetarian gorilla has ten times more strength, weight for weight, than a flesh-eating man

CHAPTER XIII

Meat Is Good Protein, But Must Be Shunned by the Toxic

FIRST-HAND protein as found in wheat, legumes or nuts will not infect the intestines, because it is free from bacteria. But can a man keep healthy and strong on such a diet? Undoubtedly he can. Actual tests prove that, weight for weight, a gorilla has ten times the strength of a man, but this king of the forest gets his protein first hand from the vegetable world. Man is also one of the primates. Anatomy and blood tests prove him nearer the ape than he is to any other animal.

Prof. Irving Fisher of Yale has published an account of contests extending over many months which he himself conducted with classes of men, some divisions eating meat, others abstaining and he tells us that the flesh eaters lost every time.

Those who have a margin of protective reserve power still left can continue to eat the bodies of dead animals without feeling ill so long as their overworked anti-toxic organs shield the blood-stream from poisons but unfortunates, like the writer, whose natural defensive armour has been shot to pieces by microbes must never chew second-hand protein but always eschew it instead. To myself, the leg of a chicken brings suffering and persistence in such intemperance would soon bring me to the tomb.

But someone will say: "If the putrefactive protein-consuming microbes are so bad for human beings why do they not injure carnivorous animals?" They do. But all meat-eating creatures are especially built for that purpose. The alimentary canal of a dog or a lion is only four times the length of the body. Man's food canal is ten times his body's length. Consequently, food passes through short-tubed carnivorous animals before it can putrefy, while such poisons as are produced by their diet of flesh are quickly destroyed by the enormous liver that is characteristic of carnivora. A dog's liver is four times bigger than a man's as compared with the size of their bodies. Moreover, flesh-eating animals devour their victims before they are dead and as a consequence bacteria have not time to multiply and dominate the flesh of the corpse.

Carnivorous animals, from the day of their birth, manifest a craving for a flesh diet, while the young of herbivorous creatures as instinctively reject such food. Kittens will not eat peaches and plums, yet greedily pounce on cockroaches and mice, but the young of herbivorous animals such as baby rabbits, monkeys or human infants will not eat insects and mice, but seize with delight such foods as plums, apples or nuts.

Our Jaws Have Degenerated

I have no doubt that during the untold ages that our bodies were being evolved, our ancestors subsisted on leaves, green shoots and the fruit of such trees as pine cones, acorns and filberts. Nuts contain complete protein and undoubtedly modern man would thrive best on such a clean, wholesome diet, if he only could masticate nuts as his simian ancestors did. But he cannot—there is the rub. The trouble is not with the nuts, but with man's degenerate jaws. However, the difficulty disappears when the nuts are ground into powder, as is now being done in the great sanitariums that specialize in auto-intoxication.

To digest nuts which have had no more milling than a modern man's mouth can give, would tax the tube of an ostrich.

In the Orient, orphaned infants are raised upon nuts that have been ground to powder and then mixed with water.

But it should be remembered that though vegetable protein is sterile as it enters the stomach, yet, if more be taken than is needed for growth and repair the putrefactive bacteria in the colon will turn any excess of such nitrogenous food into poison so soon as it passes the ileo-cecal valve, though laboratory analysis shows the putrefaction is less marked and less toxic than that which results from a flesh diet.

Milk and eggs, though animal products, are less toxic than flesh. As it comes from the cow, normal milk contains no bacteria. The same is true of fresh eggs. Moreover, the lactose in milk is absorbed four times more slowly than other sugars and so often reaches the colon and feeds the friendly bacteria that thrive upon carbohydrates.

For this reason, and also because milk contains more of the needed vitamines than all other food, a lacto-vegetarian diet is being recommended as the ideal by such authorities as McCollum, Hopkins and Funk. Egg yolks, so rich in iron, and milk, with abundance of fresh, clean leaf-food, like lettuce, is especially good for growing children who need more nitrogenous food.

Clowns Regain Power to Move Their Toes

No matter what others may think, the experienced, practical, laboratory technician knows that the average "healthy" adult is being constantly subjected to the poisonous products of billions of toxic bacteria in the colon. But innumerable laboratory experiments prove that obedience to the laws of health will always change this condition unless there be some abnormal obstruction in the alimentary canal.

The first step, as we before hinted, is to see to it that the wastes of the colon are extruded with the frequency nature requires. Everyone admits it is essential for infants to have several bowel movements a day. Why is this not equally necessary for adults who subsist on food much more liable to corruption than milk?

Can the power to expel the wastes of digestion at will several times daily be regained after it has been lost many years? In the majority of cases it can and that without cathartics which increase constipation and do harm.

To our ancestors, the ability to move the ears was of the utmost service. Our ear muscles are so atrophied that we do not know we have them. Yet, by tireless persistence comedians regain this accomplishment.

The shoeless toes of savages are almost as flexible as fingers, but the first time a civilized man attempts to play the piano or scribble a note with his feet he is not successful. Yet anyone who has attended a circus sideshow knows that by persistent endeavor such feats can be done with the toes.

Dr. Saleeby, Chairman of the Eugenic Society of England, says that he has observed that if a hypnotized person be ordered to move his bowels at a certain hour, the act is invariably accomplished at the specified time. He, therefore, concludes that defecation is controlled by the subconscious mind.

If the average person at stated times tries to regain the power to move his bowels at will with the persistence the comedian employs in learning to move his toes, he will sooner or later be just as successful and no other accomplishment brings such royal rewards.

Eating Causes Peristalsis

The first step is to decide on the hours when the efforts are to be made and then adhere to the schedule, no matter what may befall. The natural time is after meals, as eating transmits peristaltic waves down the whole length of the food tube.

All efforts, however, will be useless unless natural laws are observed in other respects.

Robbing foods of their God-given cellulose is one cause of constipation. Prehistoric man had no bran-less bread and no meat. His forest-grown food contained much fibre and roughage. Without this, man's simian-like, elongated intestines cannot have normal peristalsis. To give the necessary bulk, enough cellulose must be added to every meal. Bran for this purpose is good, but agar is better, as it keeps the colon contents very moist.

An excellent form of cellulose is psyllium seed as used in the French sanitariums. Two tablespoonfuls of the seed are boiled for five minutes in a pint and a half of water and the resulting abundant oil is drunk with a little of the seed.

Dr. Eugene Fisk of the Life Extension Institute of New York, in a letter to me some years ago, suggested that the French psyllium system was better than the American bran and mineral oil method and he regretted that the seed could not be bought here except at prohibitive prices. I now import psyllium from France for myself and friends. It is purely a food, not a medicine and acts mechanically, by giving lubrication and bulk.

The taking of plenty of water throughout the day is also important. But I have proved to my own satisfaction by hundreds of experiments, the truth upon which all authorities insist that the drinking of liquids with meals increases intestinal putrefaction. Urinalysis, for example, always shows indican more pronounced after a meal in which much liquid has been taken. This is probably due to the fact that fluids hurry protein through the digestive tract into the lower bowel before it is all assimilated.

Natural Position Compresses Colon

The next sine quo non in acquiring colon control is to assume the natural position. The high seats of modern toilets make this impossible unless a foot-rest be employed. In rural France *un creux dans la terre* is the only convenience provided. If convention insists upon high seats it ought to provide us with foot-rests.

Prophylactic Teaching Needed

The New York Times lately called attention to the fact that many accidents are due to the fact that so many mechanics, who pose as repair men, are incompetent. "The Times" suggested that properly qualified and duly licensed mechanics should be stationed at intervals along the high road. The idea is good, but it is beginning at the wrong end. A better plan would be for the State to provide instructors in the art of driving and caring for the car and to issue licenses only to the competent. Were this done, emergency mechanics to take care of wrecks would become far less necessary.

Physicians are the repair men for the human machine. It is right that the State should take care that they are competent, but man's body is the only machine for which no spare part can be obtained. When the average man finds it necessary to stop at the medical repair shop, irreparable damage has been done already.

The average man has no scientific knowledge of the mechanism and needs of his own physical machine. He would blush to be as ignorant of his car as he is of himself. If he be a farmer, he knows he cannot expect a good harvest unless he supplies his crops with the elements their nature requires. He knows it pays to study how to take care of horses and hogs, but the feeding of himself and his family he leaves to custom and chance.

Many lives and much money could be saved if the results of modern science were brought to the people in a way they could understand.

Years ago, when I woke up to the fact that my health had been ruined through not knowing how to take care of my body, I bitterly said: "Why was I taught everything else and left ignorant in matters of life and death?"

CHAPTER XIV

What Causes Cancer?

It Results from the Degeneration Caused by Intestinal Toxemia, Is the Verdict of the Great Specialists

THE current number of GOOD HEALTH calls attention to the fact that cancer specialists throughout the world are coming to the conclusion that there is some very close connection between cancer and constipation.

Sir Arbuthnot Lane, the eminent London surgeon, has lately called attention to the influence of intestinal toxemia resulting from constipation in causing cancer of the breast and other organs. Dr. Lane believes that constipation and the toxemia resulting from it are the chief cause of cancer of the colon and of ulcer of the duodenum and, likewise, of cancer of the stomach, which frequently follows gastric ulcer.

Sir G. L. Cheatle, Fellow of the Royal College of Surgeons and Surgeon to King's College Hospital, London, agrees with Dr. Lane, as does also Dr. Nathan Mutch, of Guy's Hospital, London. Dr. Mutch bases his belief upon observations made in performing about 2,000 post-mortem examinations.

My own observations as a laboratory technician specializing in fecal analysis long ago led me to suspect that the poisons generated by the putrefactive bacteria in the lower bowels in some way bring about cancer. A fecal analysis of a person suffering from cancer always discloses a highly toxic condition in the colon and it makes no difference in what part of the body the malignant growth is located.

Some years ago when a physician had almost worried a friend of mine to death by suggesting that a constant and mysterious pain in the stomach might be caused by cancer, I said, "Let me give you a fecal analysis." When cultures of the waste products of the colon showed an unusually good type of flora I said, "Don't worry, I'll bet all I have you have no cancer." Time proved I was right.

Cancer is difficult to cure. It can be prevented if people will learn to eat food which has not been robbed of its cellulose, salts and vitamins. This is one of the objects of the Health Education Society.

JORDAN ON CANCER

(From the presidential address of A. C. Jordan, M.D., before the Hunterian Society, British Medical Journal)

"In chronic intestinal stasis active pathogenic bacteria thrive in the bowel; these form poisonous products in the intestines, which are carried by way of the thoracic duct into the general circulation, and thus reach every living cell of the body. No tissue or organ can resist their baleful influence; every tissue attacked by them loses some of its power of resisting pathogenic influences, and this lowered resistance has a very potent influence in favouring the occurrence of cancer."

SIR W. ARBUTNOT LANE, M.D., F.R.C.S., ON CANCER

(From the British Medical Journal, October 27, 1923)

(Dr. Lane is, at the present time, regarded as England's most eminent surgeon.)

"The profession is only just beginning to realize the enormous part played by the defective functioning of the gastro-intestinal tract, the consequent fouling of the food-supply, and the poisoning and deterioration of the tissues by septic material absorbed from the intestine.

"The cancerous cell will only grow in a suitable soil, and that soil is provided for by the prolonged action of the toxins in the tissues.

"It is the habit of civilization to regard a single formed motion a day as the normal, so that the individual is habitually constipated for at least 24 hours, and the products of the food consumed during that period are accumulated in the large intestine and in the first instance in its termination. This spells the failure of civilization and is a veritable Pandora's box.

"Besides the mechanical results of stasis, the sequences of which are quite obvious, we have those which are consequent on the fouling by organisms of the dammed-up contents of the small intestine, duodenum, and even the stomach, with the extension of the infection along the hepatic and pancreatic ducts, which produce gall-stones and cancer. The mode of the extension of the infection in these is as apparent as the mechanical changes. The next series of changes we have to consider are those which come about by the absorption of the infected contents of the gastro-intestinal tract of more toxins, etc., than the liver is able to deal with. These noxious substances getting into the circulation are carried away to every organ and tissue in the body, and produce disastrous results in proportion to the degree of the toxicity of the blood."

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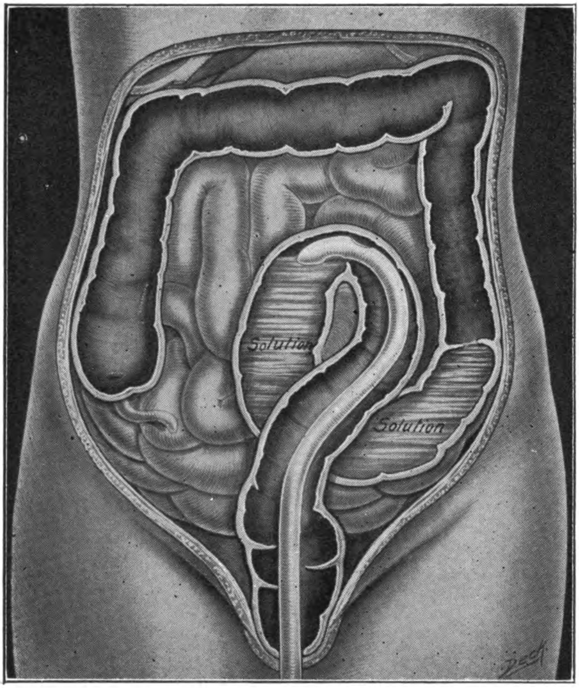
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Fig. 1

Showing Tip of the Rectal Tube Passing Through a Loop of the Sigmoid (See page 156)

CHAPTER XV

How Long Will It Take the Garden To Grow?

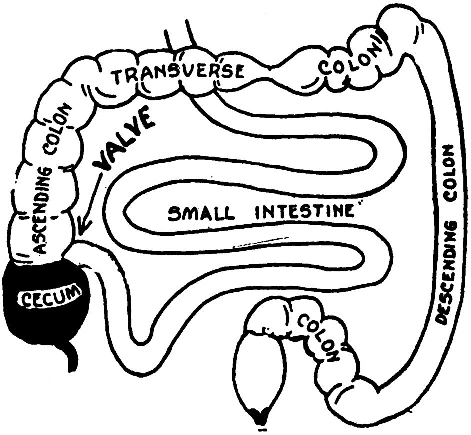
WHEN a physician prescribes a course of Bacillus Acidophilus Milk, the patient generally wants to know how long it will be before the protective plants have established themselves in the intestines and have driven out the poisonous germs. This is a question no one can answer.

Sometimes the flora is transformed in an astonishingly short space of time. I have known cases where the first fecal analysis has given a picture of one hundred per cent of putrefactive bacteria and yet ten days later the intestinal tract has been as free from all noxious germs and as replete with protective bacteria as the soiled napkin of a nursing baby.

In such cases, the organs of elimination are in good working condition and the bad fecal flora has merely been due to over-indulgence in flesh food. Other patients progress more slowly but with perseverance and strict obedience to the dietetic and other directions of the physician they finally "get there just the same." That is, most of them do—but not all.

I have known people to abstain from all animal protein, drink Acidophilus Milk for months and religiously follow all other directions of the physicians and yet their fecal wastes continue to be nothing but putrefying mountains of the piled-up bodies of unthinkable billions of Coli, Welchi, Streptococci and of every other variety of loathsome germ that befouls the intestinal sewer of civilized man.

In such cases, we always advise an X-Ray and this generally reveals some derangement of the plumbing that retains part of the feces. With many, the trouble is in the pocket located at the bottom of the ascending colon and known as the cecum. Before any improvement can take place, these, out-of-the-way cesspools of corruption, must be cleaned out and disinfected and the muscles must be strengthened so that they naturally and automatically compress the pockets and squeeze the residuum out as a boy compresses a rubber ball when he squirts water into the eye of a friend. The great problem is how to restore this compressing power to the over-stretched walls of these colon pockets.



Shaded Portion Shows Feces Left Behind In Cecum or Blind Pocket of the Ascending Colon

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Cathartics are worse than useless and eventually make conditions hopelessly bad. Certain exercises are of great help.

The large lower bowel is shaped like a capital U turned upside down ∩. The wastes of digestion enter this sewer near the bottom of the right hand terminal and the feces must climb up this pipe for about a foot. This tube originally was horizontal. It is upright or "ascending" today because human beings persist in balancing themselves on their hind feet instead of walking "on all fours" like other mammals. This perpendicular stunt of mankind is perhaps a good habit because it has freed our front legs to do other things and thus lifted the race from savagery to civilization, but it has put such internal (or infernal) organs as the colon at a disadvantage.

Going around on "all fours" at intervals during the day is good exercise and brings blood to impoverished nerves.

In health the muscles of the bowel have the power of contracting and compressing the tube and thus forcing the feces out of the cecum, up the ascending colon and across the transverse section towards the outlet.

Constipation bulges the walls of the colon and the overstretched muscles lose their power. But perseverance in certain exercises will restore strength to these parts.

Here is a good one. Throw yourself on your back on your bed, raising your legs at the same time till your feet lean over your head. Repeat

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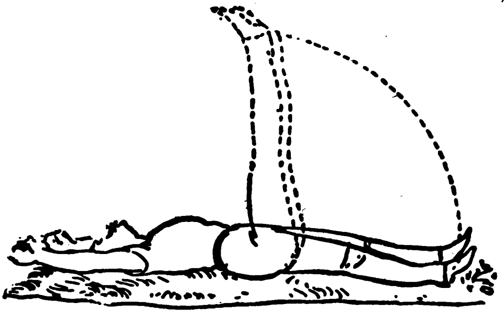
this twenty times, twice a day. It will force the laggard feces up the ascending colon and at the same time give strength to the abdominal muscles. (See cut.)



Here is another. Practice standing on your head with the help of a friend and massage the cecum with a sweeping movement from the appendix to the liver. This brings gravitation to your assistance and generally starts something.

If this is too strenuous try another all by yourself. Every night and before you rise in the morning, lie on your back and brace your heels as high as possible on the wall at the head of your bed till your body becomes an inclined plane with your toes pointing to the stars. While in this happy position use your hands to compress the contents of the cecum with a sweeping movement towards your nose. This pocket (the cecum) is located on the right side of the abdomen just above the groove where the thigh joins the body.

When all else fails, colonic irrigation and implantation of Bacillus Acidophilus in the infected

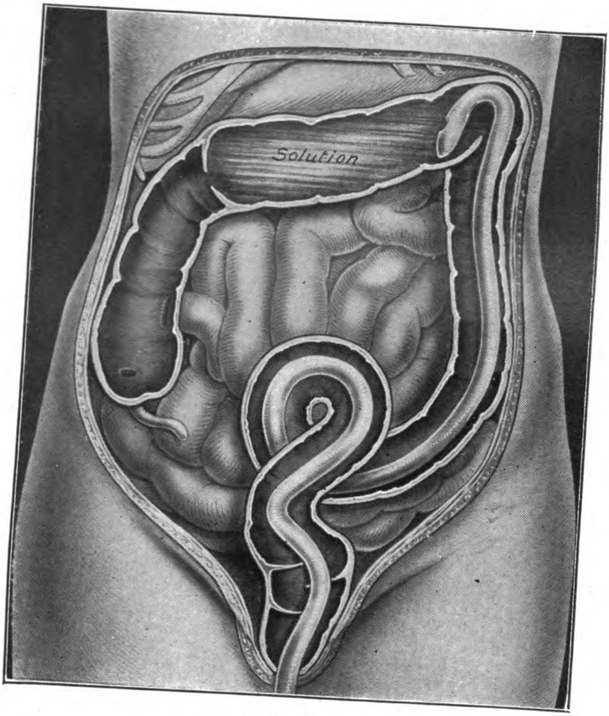


Fig. 2

SHOWING THE TUBE COMPLETELY PASSED THROUGH THE LOOP OF THE SIGMOID, AND THE TIP ENTERING THE TRANSVERSE COLON (See Page 157) pockets is the finest thing in the world. This can only be done by an up-to-date and experienced proctologist. The ordinary enema is useless for this purpose. But the newer method of siphoning out the ascending colon and cleansing the sacs with antiseptic solutions preparatory to planting the protective flora generally does permanent good. It removes the impacted feces which prevent peristalsis and strengthens the debilitated muscles so that they begin to act automatically and naturally. The greatest success results when Acidophilus is taken in milk cultures in the diet at the same time that *whey* cultures are administered by the rectum. *Milk* culture must not be administered direct to the colon because it contains too much protein.

I have watched the success of this method in many cases. One, the worst example we have on record, was that of a woman suffering from auto-intoxication accompanied with much pain in the head. The physician sent her to the Health Education Society for Bacillus Acidophilus Milk, which she continued to take for six months without marked benefit. Then an X-Ray revealed the cecum greatly enlarged and impacted with feces and devoid of all contractile power (see cut, page 80). Under the direction of a physician she then received high irrigations accompanied with Acidophilus implantations for a period of two months.

As a result, the weakened muscles of the colon gained strength to function without assistance; much infected mucus membrane was sloughed off by the action of the antiseptic solution and a good

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growth of B. Acidophilus was successfully implanted. Her health now, after some months, is quite normal. The protective bacteria seem to have colonized permanently and the distressing headaches to which, for years, she had been a martyr have quite disappeared.

The extracts on page 152 from an article by Mr. Schellberg of the Schellberg Institute describe clearly the most scientific and successful method of changing the flora by irrigation that we have ever seen.

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CHAPTER XVI

Vitamins

VITAMINS are essential to life and health and are to be found in abundance at the green grocery and dairy stores. But beware of the advertisement that tells you to buy Dr. Foolem's Vitamin Tablets at the nearest drug store.

Vitamins are slippery fellows, and refuse to be imprisoned in any kind of tablet or bottle except a milk bottle.

The following vitamin list, based on the British Research Committee's report, is endorsed and distributed by the Life Extension Institute of New York in their official bulletin.

One object of the Health Education Society is to warn the public against medical frauds and to direct them to reliable Institutions. We have every confidence in the Life Extension Institute of New York. It is every man's duty to himself, to his family and to his country to be examined by such an organization at least once every year.

The vitamin theory has been fully substantiated by laboratory experiments on animals and clinical observations of babies and adults; that is, we may confidently say that there are certain substances of unknown composition which are present in some foods and absent in others and are necessary to some extent in our diet in order to attain proper growth and maintain our tissues in a state of health. A diet that is complete in every other particular, but has been so treated that these substances have been removed, will be insufficient to maintain health.

It was formerly thought that only under very extreme conditions could vitamin deficiency exist, and in the early days of vitamin discussion, the public was continually reassured by conservative scientific authorities with regard to any possible vitamin deficiency in this country. Broader and more exact knowledge requires a change in this attitude. It is true that there is little danger of beriberi or scurvy manifesting itself in our adult population. It is pretty well agreed, however, that infantile scurvy in varying degrees is very common and that malnutrition and retarded growth through other forms of vitamin deficiency are conditions to be reckoned with. Orange juice and tomato juice not only protect against scurvy, but increase the rate of growth of human infants and other animals.

Fresh raw cabbage or "cold slaw" is rich in all known forms of vitamins. It is also valuable on account of its bulk and its minerals. A person who can eat raw cabbage and tomatoes with a relish would be very foolish to take a vitamin tablet instead.

How about the people who cannot, or think they cannot, eat raw cabbage, or spinach, or carrots; who will not drink much milk or eat fruits and green vegetables in any quantity? There are many such people, and curiously enough and unfortunately enough, it is quite common for a poorly nourished and half starved individual to have little appetite. Dr. Clemens Pirquet, head of the American Relief work in Austria, in his recent address in this country, has commented on the fact that it was necessary to force many of the children to eat the full ration provided. They were required to eat every scrap of the food furnished before leaving the food station, and one little Miss took a whole morning to consume her modest portion. Dr. Pirquet wisely denounced the prevalent notion that food unwillingly eaten would not be digested or afford full nourishment. These undernourished people should therefore make an honest effort to eat freely of vitamin-bearing food, such as cabbage, spinach, turnips, carrots, oranges, lemons, tomatoes, milk, eggs, whole wheat and a number of other foods.

We herein publish a list, based upon the British Research Committee's report and that of other investigators, showing the distribution of vitamins in foods. We believe that on present evidence it is wise to give all infants, even breast-fed infants, after the first month, orange juice or strained tomato juice, as these not only protect against scurvy but have influence on growth.

In improving the so-called average individual let us do all that is possible to educate him in the wider use of vitamin-bearing foods.

Foods containing the three vitamins in protective quantity— *Fat soluble A.* *Water soluble B.* *Water soluble C.*	*Foods containing chiefly Anti-scorbutic and appetite-promoting vitamin—* *Water soluble B.* *Water soluble C.*
Tomatoes (canned and fresh)	Apples
Cabbage (fresh, raw)	Banana

Carrots
Cauliflower
Peas (fresh)
Spinach
Turnips
Lettuce
Milk
Liver

Foods containing chiefly growth and appetite-promoting vitamins—
Fat soluble A.
Water soluble B.

Milk
Eggs (fresh and dried)
Whole cereals—rice, rye, oats, barley, wheat
Sweet potatoes
Parsnips
Kidney, Brain, Sweetbread
Fish roe
Codfish
Cocoanut
Almonds
Hickory nuts

Oranges
Grapefruit
Lemons
Limes
Peas
Potatoes
Onions
Raisins

Foods containing chiefly appetite- and nutrition-promoting vitamin—
Water soluble B.

Yeast
Milk
Eggs
Oranges
Kidney beans
Navy beans
Indian cornmeal
Brazil nuts
Chestnuts
English walnuts
Filberts

Foods containing chiefly growth-promoting vitamin—
Fat soluble A

Butter
Cream
Codliver oil
Salmon
Herring
Cheese
Egg yolks

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A fourth vitamin "D" has been suggested by Hess, protective against rickets and found in codliver oil. Others claim that the great excess of fat soluble A in codliver oil is the protective factor. Water soluble B and C are the important protectives in adult life, yet A is also doubtless needed; all three are needed in infant and child life.

The above is not presented as a complete list but includes the commonly used and available foods.

Non-vitamin bearing foods—
Lard
Olive oil
Cotton seed oil
Cocoanut oil
Margarine from vegetable fat or lard
White flour
Pure corn flour
Polished rice
Milled cereals
Meat extract
Pork fat
Sugar

RULES OF HEALTH
(DIET)

1. Eat vitamins. They are essential to health and life and are contained in raw fresh food such as green leaves (like lettuce) fruit, vegetables and milk.
2. Do not eat spices and condiments, or canned, pickled, salted, embalmed and cold storage foods. Avoid sugar, white flour, polished rice and all commercially prepared foods which have been robbed of their vitamins, minerals and cellulose.
3. Take enough cellulose every day such as spinach, bran or agar.
4. If you take flesh food or fish be sure it is quite fresh and avoid excess of protein.
5. Masticate thoroughly.
6. Get the habit of natural, regular evacuations after each meal without cathartics or enemas.
7. Have a physicial examination and an analysis of the bowel excreta and urine at least twice a year so as to make sure that your "intestinal garden" is dominated by the natural, protective, Acidophilus flora and not overrun by poison-producing weeds.

Neglect of the foregoing rules brings on toxemia, acidosis and most of the maladies of civilized life probably including cancer.

RULES OF HEALTH
(HYGIENE)

1. Cleanse the mouth before and after each meal.
2. Use plenty of pure water internally and externally.
3. Live and sleep in the fresh air.
4. **Gradually** increase your exercise till it reaches the essential minimum equal to eight miles of walking daily (with frequent rests).
5. Ventilate every room you occupy.
6. Wear light, loose and porous clothes.
7. Keep happy and sleep enough.

CHAPTER XVII

Our Surfeited Bodies Starve For Essential Elements

"COME and see me feed a dead man," said a distinguished microbiologist to me the other day as we stood in his laboratory. It was a weird sight. The "dead man" had succumbed during a major surgical operation and for over six years the grass has been growing green on the tomb in the distant cemetary where his body lies buried. But here under the glass of the laboratory still living tissue cells of the dead man's internal organs go on functioning in perfect health and will doubtless continue to thrive so long as they are daily cleansed from their own toxic wastes and fed with nutrient media. Now our bodies are entirely built of billions of similar cells arranged in specialized colonies to perform various functions.

Those degenerate changes—the whitening hair and failing faculties which we call "old age" are not the result of time but are simply due to the fact that some group of cell-colonies, such as the heart or stomach or lungs have been abused in some manner that has caused them to fail in their duty of supplying their fellows cells throughout the body with suitable food in the form of clean nourishing blood.

It would be far from true to say that the secret of perpetual youth has been discovered but it is no exaggeration to say that astonishing progress has been made along those lines.

Science has already tracked many of the factors that cause "old age" to their lairs and is hot on the trail of others.

Wonderful advances have been made in the last few years in what is known as "preventive medicine." By medicine we do not mean medication by potions and pills. Drugs today are pretty thoroughly discredited.

Sickness Comes from Ignorance

Laboratory tests such as the one I have mentioned prove that our body cells are potentially immortal—but their life depends on two conditions, first that they must be regularly and sufficiently nourished with all the chemical elements of which their structure is composed, and, secondly, they must be kept from committing suicide by the reabsorption of their own toxic excretions. Disease, old age and death are generally the result of our ignorance and disregard of these two conditions.

Our bodies are composed of sixteen elements—iodine, sulphur, iron and so on. Eatables as produced by nature contain these necessary building bricks. But unlike the animals civilized man is not satisfied with food in its natural state. He must prepare it and this preparation often consists in throwing away elements the body needs for growth and repair.

This is the curse of the modern milling methods and of the refining processes of commercial chemistry, with the result that sugar and bread and many other commodities are robbed of elements essential to health and longevity.

Primitive man ate his foods raw necessitating fine mastication. We suffer from acidosis and a host of maladies because we do not eat enough of fresh garden food and we boil out of our vegetables such needed elements as phosphorus, lime, silicon, sodium, magnesium, sulphur, iron, potassium, chlorine, flurine, and iodine which we need every day and which we cannot buy from the drug store in the organic form our bodies can assimilate. And by cooking and canning and cold storage we destroy essential vitamins.

We Are Made of What We Eat

By breaking the law of nature in these and other ways our bodies fail to be built in a sound and enduring manner. It is never to be forgotten that we are made of what we eat. The food we consume today will be walking and talking tomorrow.

Prof. Irving Fisher estimates that if the newer knowledge of nutrition that is now locked up in reports to learned societies could be disseminated in plain language to the people, hundreds of thousands of lives and millions of money could be annually saved.

Our war draft revealed that 50% of our young men had such badly built bodies that their vital organs could not be trusted to function.

Eighty percent of our school children coming from homes where "good food" (?) is abundant nevertheless show serious signs of malnutrition. And it is not necessary to use microscopes and other laboratory processes to find out this fact. Open the mouth of the average child and you will see great holes in the teeth. This is merely a sign of the general lack of essential elements. If a house began to decay before it had been built ten years you would suspect poor material had been used in the structure.

Most children show physical defects more serious than decay of the teeth, yet dental caries itself is a sufficiently grave menace. Ten years ago the dentist tried to save the decayed teeth to serve as pillars for bridge work. Today he knows that holes in the teeth are gateways through which rheumatism, heart disease and other maladies gain entrance. When mothers know more of food and hygiene, heart disease and other ill health will go out of fashion.

In consequence of the many ways in which we all break Nature's laws, a physically normal man or woman is absolutely unknown.

Dr. Eugene Fisk, Medical Director of the New York Life Extension Institute, says that in all the cases that have come before him and his staff no one has yet averaged one hundred per cent of health. I can readily believe this for it has fallen to my lot as a life-long practical laboratory worker to analyze a large number of specimens of body-fluids, tissues and wastes but I have never found an individual that did not reveal conclusive evidence of the impairment of some vital organ. Indeed it has passed into a proverb among all laboratory technicians that a certain amount of disease is normal for civilized man and pathological findings (such as, for example, indican in the urine) are never reported as present unless they appear in excess of the average divergence from health.

Value of Physical Examinations

A chauffeur who did not have his master's car examined at frequent intervals to discover what parts were receiving undue wear and tear would be held guilty of gross neglect. Yet the majority of people permit their bodies to be worn out at some vital point and thrown on the scrap heap many years sooner than need be because they neglect to find out which of their vital organs is being abused by abnormal wear. Thus, by carelessness and neglect most people commit suicide.

Some say that they do not want to know the weak points of their bodies. But in the vast majority of cases avoidance of the wrong habit which has caused the injury will restore the person to health. Hence the old saying that to live long one must acquire an incurable disease and then take care of it. For the human body is a machine that automatically repairs itself if you give it a chance.

If a motor car were invented that would continually make good its own wear and tear provided we daily ground up together and poured into it a mixture of glass and brass, and the other materials of which cars are composed, what a wonderful machine that would be. With perfect care, an auto like that would last forever. Man's body is a car of this kind. But most of us are too indolent to find out the way to take care of this marvellous machine entrusted to us by our Master.

Modern science has discovered methods of finding out with the greatest accuracy what is the true physical condition of every organ and part of the body. The first and perhaps most important line of approach is by means of an analysis of the various excretions and of the refuse of our metabolic processes.

If in a hundred mile run we collected the waste products thrown off by a motor car and by analysis discovered an undue proportion of powdered leather therein, we would know that the clutch was receiving abnormal wear, for this is the only spot in the inner works of the car where leather is found. Much more accurately from an examination of the wastes that the kidneys filter out from the blood we can tell the condition of nearly every organ of the body.

Information as to the bacteria of the intestinal tract as disclosed by the fecal refuse is still more significant and this can be told with precision by the newer methods of analysis.

Unfortunately examinations such as we have in mind are a very expensive process.

Ordinary Analysis Far From Complete

The ordinary pathological laboratories merely give a few of the simpler tests. This is all that can be expected considering the cut rates that obtain for such work.

A complete urinalysis, for example, consists of twenty or thirty elaborate chemical tests beside microscopical work. Yet every drug store announces "complete urinalysis—one dollar." Most laboratories profess to give more attention to specimens received from physicians than to those sent in from other sources but too often the only difference is the higher price charged to the doctors.

A move in the right direction has been made by the Health Education Society of England. This organization has established up-to-date laboratories supported by the National Church where reliable work by trained technicians is performed at actual cost.

The Health Education Society also provides instruction by experts in the various parishes about the care of the body.

Such teaching in the Church has met with some criticism on the ground that it is not religious work. But we are rapidly learning that spiritual culture is not complete unless it includes care of the physical nature.

In the last twenty years much emphasis has been laid on the fact that mind influences matter. Psychoanalysis is teaching us the further fact that matter influences mind.

Sin is the natural fruit of a defective soul and both generally have their origin in the imperfect flesh of a body that is defective because it is not nourished and sustained in harmony with the laws of nature.

"Greater progress has been made in the prevention of disease in the last ten years than in any other department of human endeavor."

This statement from the President of the Royal Society for the advancement of science, at a gathering which had also paid tribute to the airplane and radio, is startling.

But of all this advance in the knowledge of the laws of health most people know nothing. The epoch-making secrets of the newer knowledge of nutrition are buried in reports to learned societies, while the average family, victims of conscienceless commercial chemistry, starves in the midst of abundance.

We build our bodies so badly with devitalized food that they begin to decay before manhood arrives.

Disease and premature death result from ignorance of nature's laws.

An ounce of prevention is worth a ton of prescriptions.

Dr. Saleeby says: "We physicians sit in an ambulance at the bottom of a precipice waiting for someone to fall." And he asks: "Would it not be better if we build a fence at the top?"

The Health Education Society in England has operated through the churches, organizing and training "Teacher-Nurse Corps" in every parish and giving popular instruction from pulpit and platform on the care of the body.

About two years ago, in a very modest way, a similar work was started in New York under the auspices of the Law Observance League, emphasizing the fact that health depends on obedience to Natural Law.

At the beginning of the present year, this movement was reorganized as the "Health Education Society" of the U. S. A.

CHAPTER XVIII

Food and Morality

CHRISTIAN science, Coué and others have been emphasizing that mind affects the body, but psycho-analysis is proving to us that the body affects the mind to a much greater extent.

To the question "Is life worth living?" it is usual to answer, "That depends upon the liver." But this pun is more than a joke.

Upon the condition of that part of our anatomy known as "the liver" depends to a large extent the joy and the holiness or the sorrow or sin of our lives.

The ancient Greeks and Romans well knew that the acts of the soul depend on the state of the body as the language which has come down from those times still bears witness. We speak of being "melancholy," but the word literally means "black bile" and the expression originally signified that the gloomy state of the mind described by this term was caused by the system being flooded by an unusually large amount of biliary secretion. A person suffering from chronic mental depression is spoken of as "hypochondriac" which literally means "under the cartilages," that is, under the gristly parts of the lower ribs where the liver is located. These and many similar guesses of the ancients were largely correct. We now know that our mental states depend very largely upon the poisoning of our brains and nerves by toxins carried to them in the blood.

The liver is the great anti-toxin laboratory of the

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body. Every drop of blood we possess is driven through this wonderful poison-filter every twenty minutes. A defect in the liver automatically registers itself in the moods and passions of the soul. And this interaction between the mind and the body is true in greater or less degree of every organ and part of the body. We are beginning to understand that the morals of our children depend on what they eat as well as on what they learn.

The Roman ideal of a perfect man was couched in the phrase:

Mens Sana in Corpore Sano.

A sound mind in a sound body.

There is much evidence to prove that a healthy mind cannot dwell in an abnormal and sickly body.

Defects of the flesh project themselves into the psychic nature and the result is sin which is a symptom of soul sickness.

Therefore, it is of the utmost spiritual and moral importance to build strong and sound bodies free from defects. This can only be done by intelligent obedience to the laws of nature.

No cook can bake a good cake if essential ingredients are lacking and nature does not produce a physically well-built man unless every one of the sixteen elements required by the body are supplied in our food. The less eatables are "prepared" the more likely they are to contain the materials our bodies require for growth and repair. This accounts for the fact that malnutrition is sometimes more pronounced in the homes of the rich than in the hovels of the extremely poor who live closer to nature.

Let me give some illustrations which have recently come to my personal knowledge exemplifying the manner in which sin is caused by unconscious cravings and hunger of the flesh due to a deficiency of certain elements in our modern unnatural diet. The first is that of a young theological student who confided to me that he was seriously thinking of abandoning the ministry because he could not help giving way to secret besetting sin. He said the spirit was willing but the flesh was too weak. Upon my advice he submitted to a thorough physical examination by modern methods. Analysis of the blood revealed the fact that the percentage of iron in his body was far below normal. The physician did not prescribe the required substance in the form of pills, powder or tincture because we now know iron in inorganic form cannot be assimilated by the body. But the up-to-date doctor recommended a variety of foods rich in iron with the result that in less than two months the young man's vacillating irresolution and spiritual weakness had been replaced by a will of iron that triumphed over temptation.

Another illustration of the way in which the body affects the mind that recently came to my attention is that of an earnest communicant who, for some years, had been cursed with an abnormal, irritable disposition which frequently exploded in such fits of temper that he feared he might do some one an injury.

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Fecal specimens mailed to the Jumel Laboratories of New York were subjected to bacteriological analysis by the newer methods and revealed the fact that the alimentary canal was dominated by putrefactive bacteria, that the defense powers of the body had broken down and were unable to neutralize the toxins and as a result the brain and nerves were being flooded with poisons.

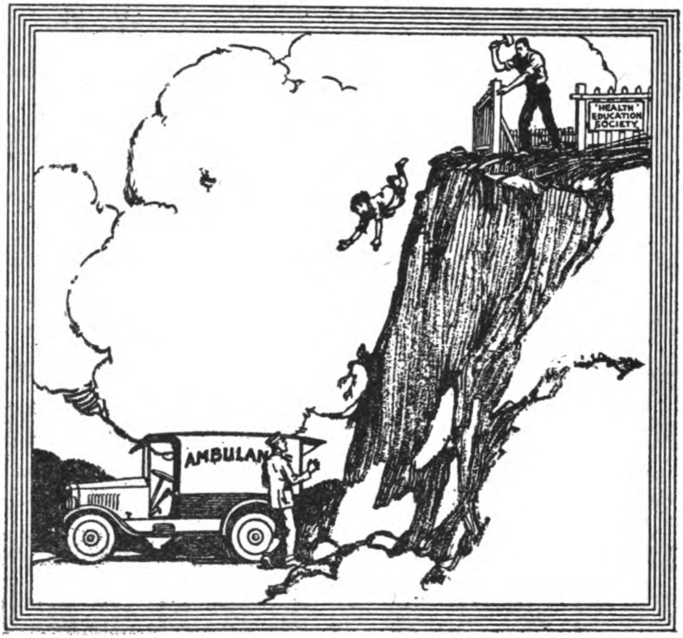
After some months of treatment by modern scientific methods the flora was completely reformed, the blood became normal, all irritation of brain and nerves ceased, with the result that the man's devilish disposition disappeared. He had been as he said "possessed by demons" but the evil spirits within him were proved by the microscope to be simply poisonous germs.

Here is another typical illustration of the close connection between the physical and the spiritual that recently came to my attention. This case was that of a woman who complained that she could not sleep because of sinful imaginations. She said she was plagued with a flood of irreligious doubts that kept her awake at night and as a result she had long suffered with the most pronounced insomnia.

Again analysis of the body fluids came to the rescue disclosing a case of extreme acidosis which had resulted in an irritation of the nervous system. Her trouble was really physicial rather than spiritual. Her body was hungry for elements which were lacking in her restricted devitalized diet. After a few weeks of a natural and normal living in accordance with the newer knowledge of nutrition in which her conventional staples of bread, potatoes and meat was supplemented by a generous supply of carefully prescribed vegetables and fruits her sinful thoughts and distressing insomnia completely disappeared and gave place to normal refreshing sleep.

In view of these facts let us remember that the Great Physician cured men of their bodily infirmities before he said to them, "Go and sin no more."

HEALTH EDUCATION SOCIETY


"HEALTH"
EDUCATION
SOCIETY
AMBULAN

Dont Wait For Disaster—Help Us Build Fences

An Ounce of Prevention is Worth a Ton of Cures.

HEALTH EDUCATION SOCIETY, INC.

The objects are as follows:

1. To organize in every parish a Teacher-Nurse Service for the purpose of disseminating in the homes, scientific information with respect to the newer knowledge of nutrition, hygiene and the prevention of disease.
2. To educate the people by means of the pulpit, platform and literature to the advantage to be gained from a physical examination at least once a year by the family physician or by reliable specialists.
3. To expose the folly of self-treatment by patent medicines and the danger of consulting irregular, unlicensed pseudo-medical men and healers posing as duly qualified physicians.
4. To gratuitously provide the necessities prescribed by physicians where families are absolutely unable to do so.
5. To educate the people to a higher appreciation of the advantages afforded by free dental examination in public schools and in needy cases to gratuitously and voluntarily supply the necessaries prescribed by the examining dentists, and to also supply the services of duly reg-

istered and practicing dentists in cases where additional treatment is required.

6. To furnish, in needy cases, urine, fecal and other analyses made by regularly practicing physicians and bacteriologists, and to culture supplies of certified Bacillus Acidophilus Milk.
7. To provide free, sanitary iced-water fountains in the congested districts of New York and other large cities.
8. To work for the establishment of many additional public comfort stations of a sanitary character.
9. To translate into the plainest language modern, scientific facts with respect to health and hygiene so as to be understood by all.

FORM OF BEQUEST

I give and bequeath to the Health Education Society, Inc., a corporation duly organized under the laws of the State of New York, the sum of $....... for the uses and purposes of the said society.

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Health Education

As Seen by SEN. ROYAL S. COPELAND, M.D.

Fomerly Commissioner of Public Health and President of the Board of Health of New York City

RECENTLY I had occasion to discuss foods with a group of four hundred women. They represented all walks in life. Many of them were unusually intelligent and well educated. The circumstance under which I met them was exceptionally favorable to determine how much they really knew about foods. This interview caused me considerable surprise; indeed, I may say I was shocked to find how little these fine women possessed, even of the fundamentals of food knowledge.

The public schools teach everything, it seems to me, except how to eat and how to live. Nobody in particular is to blame for this state of affairs; it is the natural result of the present system of education. To my mind no more important addition could be made to the regular instruction in the public schools than a course of study covering foods and their uses.

There is certain fundamental knowledge which every individual should possess regarding foods. Everybody should know the why and wherefore of eating. They should know what to choose and what to avoid. The science of foods is a vital, everyday science, a science essential to the welfare of the human race.

Health Education Among American School Children Is Needed

BECAUSE

4,000,000 have adenoids and diseased tonsils
5,000,000 have defective eyes
1,000,000 have defective hearing
2,000,000 have flat feet or spinal curvatures
4 out of 5 have seriously defective teeth
1 out of 3 is malnourished

BECAUSE

The United States now has to spend yearly
$5,000,000 to $8,000,000 for children's reformatories
$2,000,000 for juvenile courts

One of the greatest problems confronting our country is how to arouse parents and communities to a realization of the needs of the children. In the United States there are annually over 300,000 deaths of children under five years of age. At least half of these deaths are preventable. Of the babies who survive, many thousands drag through life handicapped because of improper care in infancy.

Health comes from obeying natural law; sickness is the result of its violation.

To lessen human disabilities and suffering and to thus increase efficiency and happiness, is the aim of the National Health Education Society.

"To cure is the voice of the past; to prevent, the divine whisper of today."

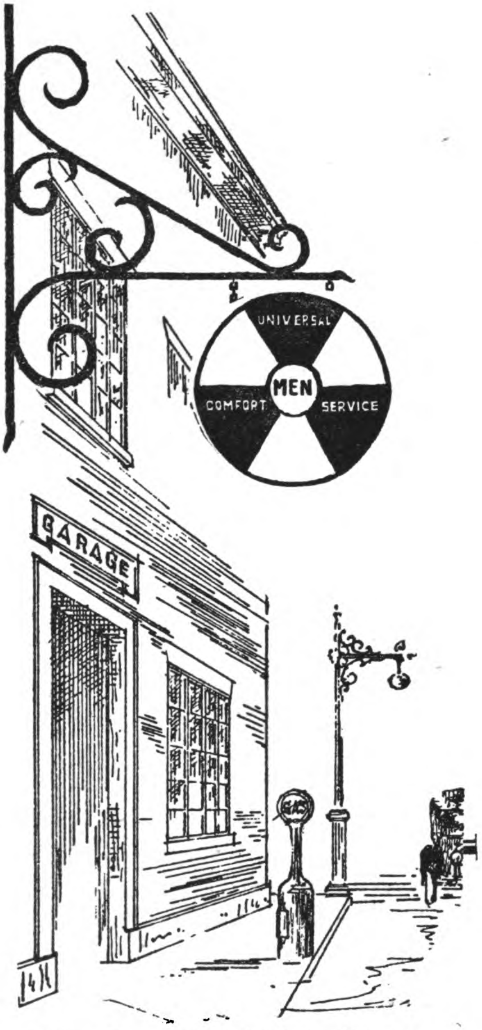
The Passing of Pills and Powders

By SIR WILLIAM OSLER, M.D.

Late Regius Professor of Medicine, University of Oxford

THE new school does not feel itself under obligation to give any medicines whatever, while a generation ago not only could few physicians have held their practice unless they did, but few would have thought it safe or scientific. Of course, there are still cases where the patient or the patient's friends must be humored by administering medicine or alleged medicine where it is not really needed, and indeed often what the buoyancy of mind which is the real curative agent, can only be created by making him wait hopefully for the expected action of medicine; and some physicians still cannot unlearn their old training. But the change is great. The modern treatment of disease relies very greatly on the old so-called "natural" methods, diet and exercise, bathing and massage—in other words, giving the natural forces the fullest scope by easy and thorough nutrition, increased flow of blood, and removal of obstructions to the excretory systems or the circulation in the tissues.

One notable example is typhoid fever. At the outset of the nineteenth century it was treated with "remedies" of the extremest violence—bleeding and blistering, vomiting and purging, and the administration of antimony and mercury, and plenty of other heroic remedies. Now the patient is bathed and nursed and carefully tended, but rarely given medicine. This is the result partly of the remarkable experiments of the Paris and Vienna schools in the action of drugs, which have shaken the stoutest faiths; and partly of the constant and reproachful object-lesson of homeopathy. No regular physician would ever admit that the homeopathic preparations, "infinitesimals," could do any good as direct curative agents; and yet it was perfectly certain that homeopaths lost no more of their patients than others. There was but one conclusion to draw—that most drugs had no effect whatever on the diseases for which they were administered.


UNIVERSAL
MEN
COMFORT
SERVICE
GARAGE
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1414

THE UNIVERSAL COMFORT STATION

THE UNIVERSAL COMFORT STATION

Why does travelling cause constipation? Because it interferes with regular habits and tempts us to neglect and defy natural duties. This is one of the perils of motoring. An attempt to remedy this condition has been made by the Universal Comfort Service Co., of Ballston-Spa, N. Y., which is establishing hygienic conveniences for men and women on the main roads. The red and yellow signs are for men, the blue and red for women.

How many people know that the originator and head of this purely philanthropic enterprise is a lady—Mrs. John A. Howell, wife of the rector of Ballston-Spa, N. Y. Our lack of public comfort stations in cities is a sin and a shame. In this respect we are far behind Europe. Formerly the saloon opposed the establishment of such places, because it got much trade that way. The cost of maintaining such public necessities would be nothing compared with the present awful injury to the health of the people, which the neglect causes. One of the objects of our National Health Education society is to work for the establishment of many additional public comfort stations of a sanitary character.

THE COLON CORRECTED BY IRRIGATION AND IMPLANTATION

By O. Boto Schellberg

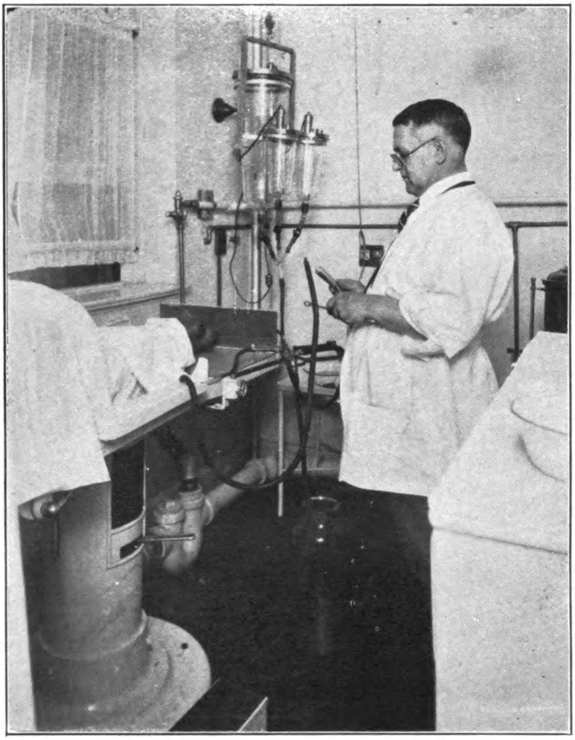
(Extracts from the International Journal of Surgery, January, 1923)

(See Chapter XV, Page 113)

From infancy to old age the intestine is a battleground wherein a never-ceasing struggle goes on between the native population and the foreign invader. Moreover, it is evident that the condition of the flora of the intestine is one of the most important factors influencing health, and even in determining the duration of life itself.

Incomplete and infrequent evacuations of the bowel may be caused by diverticula, or an increase in the size of the normal sacculi of the colon. If these sacs are deep enough feces may accumulate in them, and their passage be seriously delayed or altogether prevented. A state of chronic costiveness may result from the collection of a large amount of residue in such a cul-de-sac. These sacculi are most often found in the sections of the colon where there is likely to be sagging, as in the cecum, the transverse colon, and the sigmoid flexure. Any fecal mass not periodically expelled will become a nidus for bacterial flora of varying species and virulence.

The generation of bacterial poisons in the digestive tract and their absorption into the blood stream or the genito-urinary system give rise to a long train of ills. If we can devise a means of



Operating Room Showing the Schellberg Apparatus for High Colonic Irrigation In Use emptying out this bacterial incubator, and keeping it thereafter free from infection, we shall have gone a long way toward "reforming" the colon.

It is my purpose at present to describe a technic for colon irrigation designed to meet the needs I have outlined in the foregoing paragraphs, and to explain the steps by which the colon—even when badly diseased—may be restored to natural function and vigor. The equipment which I employ represents the gradual development of a very extended experience, and its present efficiency is the outcome of many experiments and attempts to solve a wide range of problems.

My most important instrument is a fifty-inch cecum tube—fifty French—fitted with a pointed tip, shaped somewhat like a shell. This tapering point, when passed slowly into the intestinal canal, will slip off any folds which it may encounter, the end being flexible in order to bend around sharp angles, while the body of the tube being more rigid makes it possible to lift the colon.

The irrigator consists of a swinging crane, a frame constructed to hold three glass tanks (one three-gallon, and two two-quart), a small tank for antiseptic solution, and another for holding bacterial cultures. Each tank is equipped with a cover and with electric bulbs to keep the solution at a fixed temperature, and thermometers are hung from the covers to register the temperature of the solution at the bottoms of the tanks. A long rubber tube communicates with the lower

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glass prong which in turn is attached to a three-way valve.

There is also an observation point where one may watch the return. The three-way valve rests on a folding arm fastened to a special operating table provided with a flush and a glass bowl with an electric light to facilitate the inspection and measurement of the discharge from the bowels.

The flora commonly shows many of the *Bacillus aerogenes capsulatus* together with other putrefactive microbes. Gastroenteroptosis calls for an immediate relief and this can be accomplished by the skilful use of rectal tubes together with antiseptic solutions and a culture of *B. acidophilus*.

Sometimes there is a large amount of residue to remove from both large and small pockets, and this residue may even contain watermelon seeds or like material when long out of season. The water pressure throws the gut forward and permits the tube to be advanced. When the solution is siphoned out the gut falls back over the tube.

I have never encountered an intestinal stricture, other than those produced by surgical operations or malignancy, that was not due to a constriction caused by the colonization of putrefactive bacteria which had produced spasms or intestinal interlining adhesions.

Fig. 1, p. 112, shows the tube being passed through a loop in the sigmoid. Such a loop can be widely dilated without much discomfort to the patient or making it difficult to retain the solution when the fluid is thrown beyond the apex.

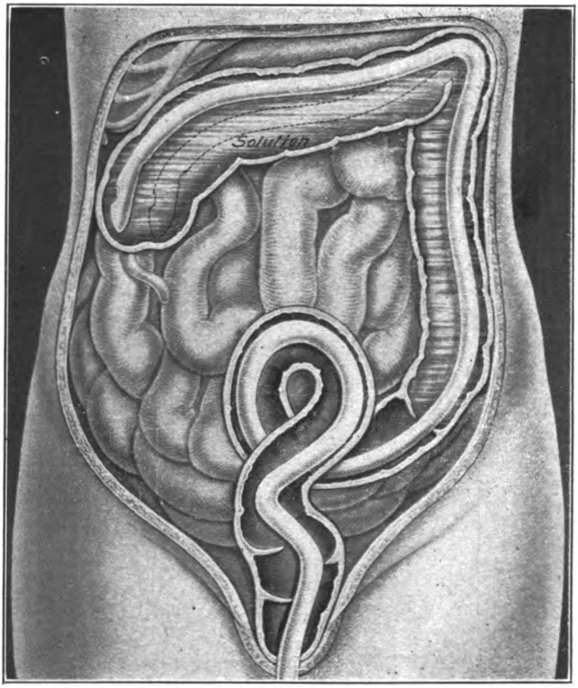

Fig. 3

The tip has now reached the upper extremity of the cecum, so that the tube extends the entire length of the gut. The cecum and upper part of colon are shown distended with solution which is passing downward, flushing the entire gut.

In Fig. 2, p. 118 the tube is being passed through the splenic flexure, but before this flexure is reached the loop in the sigmoid must be used as an additional force to propel the tube further. The loop is dilated by the passing of the tube; the water is then turned on and the pressure caused by the contraction of the loop propels the point of the tube still farther up the gut. The outflow is then turned on and the tube relaxes in the operator's hand. If it is not forced back he will know that the tube has advanced. In this way the splenic flexure is reached. The patient, who has heretofore been lying on his left side, is now turned upon his back. By so doing the splenic flexure is relieved of the weight of gravity and gives added power of traction to the hepatic flexure, in this way aiding the tube to turn the angle. The loop must still be used as a driving force to further propel the tube.

Fig. 3, p. 158, illustrates the power of the cecum and ascending colon to raise itself in the attempt to expel the tube and the barium meal within its walls. It also clearly demonstrates the expulsive power of the colon when the fluid and gases are allowed to escape following the dilation of a part. The colon, in the effort of expulsion, will follow and slip over the tube. In this way advance is made in the colon.

The colon is cleaned without discomfort to the patient.

A ten-ounce solution of dextrose or lactose containing about from four to six billion *B. acidophilus*

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at 50° C. is planted in the cecum from the small tank.

After ten days' or two weeks' daily treatment a fairly good condition of the intestines can be expected, favorable for the implantation of *B. acidophilus*. I have obtained good results from these implantations *only* when the intestines were prepared beforehand with antiseptics. Following the preparation, the therapeutic value of *B. acidophilus* is very great in allaying inflammation, eliminating large quantities of residue which consist of organic secretions and intestinal interlining. The color of the feces changes to yellow, and the odor becomes less offensive. Following this condition you will find not only the color and odor of the feces changed, but the efficiency of digestion increased. When the diet is regulated there will be no particles of undigested food.

There is no doubt that this is due indirectly to the change of flora.

The results obtained from the treatment described are as follows: All the patients show improvement and the greater part are entirely cured.

The Ideal Weight

MEN		WOMEN	
Height	Weight	Height	Weight
5′ 0″	126	4′ 8″	112
5′ 1″	128	4′ 9″	114
5′ 2″	130	4′ 10″	116
5′ 3″	133	4′ 11″	118
5′ 4″	136	5′ 0″	120
5′ 5″	140	5′ 1″	122
5′ 6″	144	5′ 2″	124
5′ 7″	148	5′ 3″	127
5′ 8″	152	5′ 4″	131
5′ 9″	156	5′ 5″	134
5′ 10″	161	5′ 6″	138
5′ 11″	166	5′ 7″	142
6′ 0″	172	5′ 8″	146
6′ 1″	178	5′ 9″	150
6′ 2″	184	5′ 10″	154
6′ 3″	190	5′ 11″	157
6′ 4″	196	6′ 0″	161
6′ 5″	201	......	....

Overweight is a serious menace to health, especially after middle life. It is attended by a much higher average death rate. Carefully graduated exercises and a gradual reduction in the amount of fat-forming foods is the only safe way to reduce. All quack methods are dangerous.

DR. WILLIAMS ON INTESTINAL TOXEMIA

(From "Major Maladies and Their Treatment," by Leonard Williams, M.D., F.R.C.S., French Hospital, London)

It is but a slight exaggeration to declare that every chronic disease is a symptom of chronic constipation. It is no exaggeration whatever to say that chronic constipation is at least a contributory cause in all chronic diseases. At the back of the microbe there is to be sought the cause of the microbe, and this cause in every case is the state of the soil which permits him to flourish. Such a state of soil is described as a chronic auto-intoxication, which is only another way of saying that the drainage system is defective. And when the drainage system is defective to the point of there being a cesspool under the floor of the gastric dining-room, the powers of resistance are so reduced that the microbe comes and takes possession with easy and stupefying assurance.

There are many diseases about which long articles and even large volumes have been written, which are no more than symptoms of chronic intestinal stasis. The percolations from the cesspool have permeated the soil, and the whole carcass becomes inhabited by the fauna and flora of decomposition and disease.